ELECTRICAL SOUTH

APRIL 1946

A MONTHLY JOURNAL FOR ELECTRIC POWER COMPANIES • ELECTRICAL CONTRACTORS • DEALERS & WHOLESALERS

CONTENTS PAGE 11 ADV. INDEX PAG

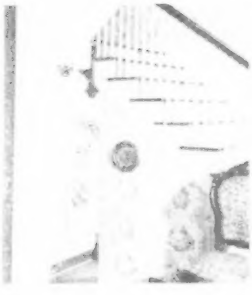
HUNTER FANS.

HUNTER ZEPHAIR RESIDENTIAL FANS

HUNTER home cooling fans possess the same quality as Hunter office cooling fans and all the desirable characteristics which many years of experience have developed.

An interesting sales feature is illustrated in the adjoining views. After space in the home did not allow the fan to be installed in the conventional location (below the ceiling opposite an outside wall inside the garage). Using another perplexing installation problem was solved because HUNTER offers a product of outstanding appearance and flawless performance, thus permitting the fan to be placed in this inconspicuous location where it is giving perfect cooling satisfaction.

Dealers experienced in selling HUNTER products are continually discovering new features that make this line so desirable to sell and install.



Reference: Kingsley W. Hooker home 2870 Catawba Lane, Memphis, Tennessee

UNTER FAN & VENTILATING CO., I

ERA SALES OFFICE: MEMPHIS, 400 SO. FRONT ST. • *EASTERN SALES OFFICE:* NEW YORK, 92 WARREN

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When Modernizing Your Station, Be Sure to Consult Your Electrical Contractor About a Lighting Checkup

INTERNATIONAL
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Exposition
and conference
SEE THE LATEST IN LIGHTING
STEVENS HOTEL
Chicago
April 25-30 1946
ELECTRICAL CONTRACTORS!
This Free Scrapbook-
Now Being Advertised
in Full Page Advertisements like this, in magazines reaching your customers and prospects among service station operators, automobile dealers, etc. Something all will want! You will help them and yourself by calling their attention to this FREE SCRAPBOOK . . . for full information on how to BUILD IMMEDIATE AND FUTURE BUSINESS in this field by utilizing the NEW BENJAMIN PROGRAM . . .
WRITE FOR FREE BULLETIN ON HOW TO TIE IN WITH THE NEW BENJAMIN SERVICE STATION LIGHTING PROGRAM
BENJAMIN
SPOTLIGHTS THE BUILDINGS
FLOODLIGHTS THE GROUNDS
1345

Like Oil and Gas... Better Lighting and Station Modernization go Together!

You can be sure that if your station needs building modernization, changes in layout, building additions or new parking facilities, it needs lighting modernization too! For Modernization and Better Lighting are like gas and oil . . . they go together!

To make sure you get station lighting that will be in step with your modernized buildings and grounds, CONSULT WITH YOUR LOCAL ELECTRICAL CONTRACTOR. By training and experience, he is fully qualified to survey your needs and make recommendations. Depend upon him and you'll insure against disappointment . . . you'll be assured lighting that is up-to-the-minute . . . efficient, economical and easy to maintain!

Ask Your Electrical Contractor to Bring You NEW FREE 52 PAGE SCRAPBOOK of Suggestions on Service Station Modernization

Here in this 52-page booklet have been gathered together the cream of the suggestions for station modernization! Hundreds of pictures of stations inside and out. Floor Plans, Business-Getting Ideas . . . the very latest ideas in station planning! YOU'LL WANT THIS BOOK FOR PERMANENT REFERENCE! YOU'LL WANT THIS BOOK to make sure you're doing everything possible to ATTRACT MORE TRADE AND MAKE MORE PROFITS.

Ask your electrical contractor for your free copy; BENJAMIN ELECTRICAL MFG. CO., Dept. Z1, Des Plaines, Ill.

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TRADE MARK

SERVICE STATION LIGHTING and *Floodlighting* EQUIPMENT

Distributed exclusively through electrical wholesalers

ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A.
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Entered as second class matter at the postoffice, Marietta, Ga., under Act of March 3, 1879
Volume 26 Number 4

A COMPLETE NEW LINE OF *Long life fans by* WESTINGHOUSE

Beauty · Power
Silence · Long Life

Designed for every commercial, industrial and household application

With the new Westinghouse Fan line you'll be in a position to meet the needs of every fan buyer in your market—from large to small—for industrial, commercial, institutional or home installations.

You'll have a Fan line embodying all those superb qualities of precision construction, plus power, appearance and durability which always have characterized Westinghouse Electric Fans.

In 1946, Westinghouse—builder of electric fans for over 50 continuous years—presents a truly *complete* line—including five big *Whirlaires*, five *Poweraires*, five *Pacemakers* . . .

12 in.
16 in.
Poweraire

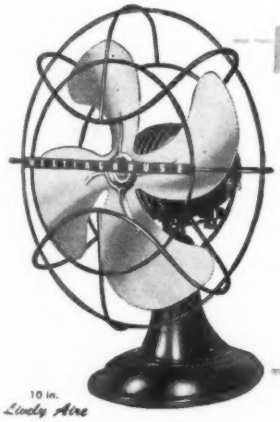
16 in.
Pacemaker

10 in.
12 in.
16 in.
Poweraire

AND

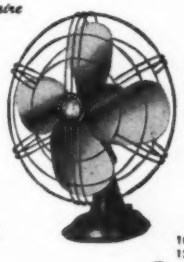
A Westinghouse Quality Fan in the Bargain Price Bracket

The new *Lively Aire* . . . smartly styled and priced to meet your market requirements in the low-price field. In this model you'll have a quality product . . . a sales maker . . . a leader.



10 in.
Lively Aire

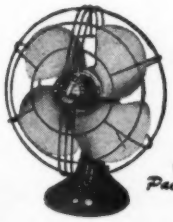
8 in.
Pacemaker



10 in.
12 in.
Pacemaker

Long life fans by
Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE



16 in.
Pacemaker

24 in.
Whirlaire
Floor, Counter, Ceiling models

Tune In: John Charles Thomas, Sun. 2:30 EST., N.B.C. • Ted Malone, Mon. Through Fri., 11:45 A.M., EST., American Broadcasting Co. Network

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Fine past performance is the key to this dealer's confidence in Commercial Credit service

"Under all normal circumstances, I would continue to line up with Commercial Credit for my financing because your record of past performance in my dealings with you is a very fine one.

"But the extraordinary circumstances under which we will be doing business for the next few years at least, make it more desirable than ever to stay with you. Your WIDE OPTION of plans offers me everything I could get elsewhere, and *then* some."

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WITH A PLAN THAT FITS YOUR NEEDS

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Somerville, Mass.
Philco—Frigidaire—Bendix
and other appliance lines

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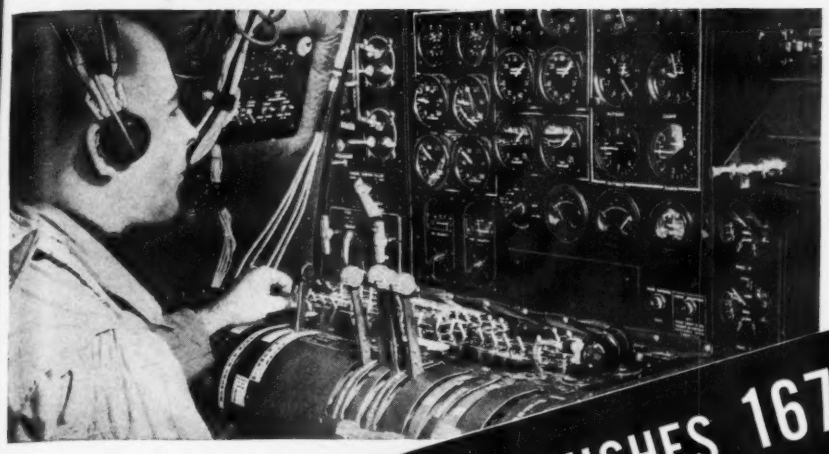
BALTIMORE 2, MARYLAND

Capital and Surplus more than $80,000,000

No electrical equipment can be any better than its insulation



This varnish was chosen to meet the exacting insulation requirements on transformers for aircraft electric power . . . .

G-E INSULATING VARNISHES 1673 & 1696

Clear G-E varnishes . . . temperature resistance . . . flexibility . . . long life . . . for transformers of all kinds

. . . and the same varnish can protect a fluorescent ballast with long-lived, heat-resisting insulation.

General Electric is one of the world's largest and most experienced manufacturers of insulating varnishes. The capacity to produce millions of gallons for myriad war applications and 45 years of experience in varnish research and manufacture are now available to peace industry. Strict G-E Quality Control assures uniformity of product in every shipment of G-E Insulating Varnishes. For details consult your local General Electric Merchandise Distributor. Or write direct to Section RIMA-465, Resin and Insulation Materials Division, Chemical Department, General Electric Company, Schenectady 5, New York.

GENERAL ELECTRIC

CD 46-13

G. E. OFFERS A COMPLETE LINE OF INSULATING MATERIALS

a rigid steel plate is the foundation of a GOOD RHEOSTAT

The first Ward Leonard Rheostats were built with a steel plate foundation. Its rigidity protected the insulating enamels, proved an excellent dissipater of heat and gave a substantial foundation for contacts, terminals and control members. Many of those early Rheostats are in active service today.

While the present day Ward Leonard Plate Type Rheostats have been modernized, made even smoother in action and offer many more steps of control in smaller diameters, they are still built on a rigid steel plate foundation.

With the wide range of types and sizes of Ward Leonard Rheostats, you will find the one to meet your requirements — from the smallest electronic to the largest industrial application. Send for Rheostat Bulletins today.

WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control devices since 1892

WARD LEONARD ELECTRIC COMPANY

37 SOUTH STREET, MOUNT VERNON, N.Y. • OFFICES IN PRINCIPAL CITIES

Lighting Fixtures for Small Homes

Some of the "Virden Value" lighting equipment for the small homes market is shown in this announcement.

Inexpensive, yet winning sincere admiration and appreciation everywhere by their complete adequacy and simple beauty—these "Virden Value" designs feature thoroughness of construction, ease of mounting and handsome finish. You can get them *now!*

Virden wholesalers will give your orders prompt service.

VIRDEN VALUES

John C. Virden Company • Cleveland, Ohio

Member American Home Lighting Institute

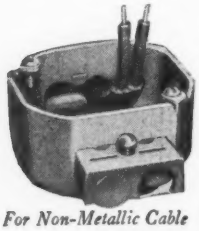
Say, Snookie, WHO'S DIS RACO Guy?

● "Ease up a bit and I'll tell you—what are you tryin' to do, make me look like a bum? It's de line that's sold by All-Steel-Equip."

Right—Builders, Contractors, and Architects throughout America know that Raco is the famous name of All-Steel-Equip's quality line of steel switch boxes and outlet boxes. Here's why you also can always rely on Raco:

- It's the dependable line, the uniform line, the line that's sold nationally by wholesalers only.
- No jagged or rough edges—no dirt or grease. Smooth, attractive appearance!
- Every Raco product comes neatly packed in a protective carton, with index showing number, quantity and finish. Easy to stock and identify.
- All-Steel has been making precision metal products for over 33 years. The Raco line is made with the same care—to the same exacting standards!

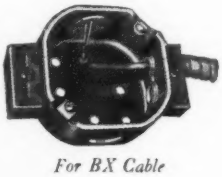
Write today—let us tell you more about Raco • All-Steel • Products.



For Non-Metallic Cable

THE JAY-KAY (J-K) BOX

Made for "BX" but with bushing plate removed, it becomes a box for non-metallic cable. Supplied in 3¼" and 4" diameters. Boxes only, or assembled on bars; external clamps allow more wiring room. Use this box now when connectors are scarce.



For BX Cable

ALL-STEEL-EQUIP COMPANY, INC.
800 Kensington Avenue, Aurora, Illinois

RACO • ALL-STEEL • PRODUCTS
SWITCH BOXES • OUTLET BOXES

STILL RANGE FEATURE No. 1

RANGES AND HEATERS

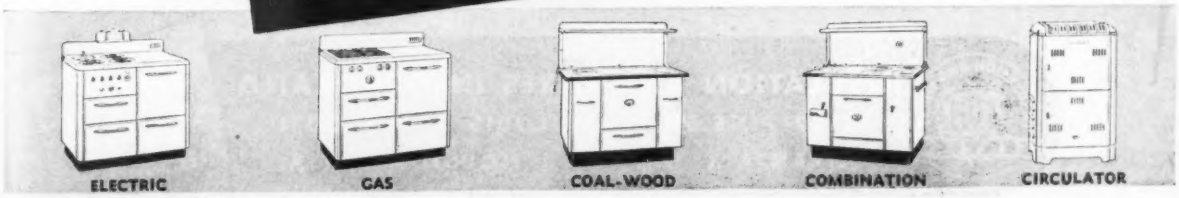
Monarch-Paramount

COAL-WOOD, ELECTRIC, GAS and COMBINATION RANGES

The winter appliance shows are over. Post-war range models have made their debut. All the dealer opinions we have gathered emphasize the fact that the industry's No. 1 electric range is still the **Monarch Roaster Range.** Consumer inquiries, orders and general sales outlook all combine to confirm this top rating. Join in celebrating MONARCH'S Golden Jubilee during 1946.

MALLEABLE IRON RANGE CO.

4846 Lake Street, Beaver Dam, Wis.



INSURE YOUR WORK WITH THESE QUALITY ITEMS...

TAYLOR
FIBRE AND PHENOL FIBRE

TAYLOR FIBRE ... *Best By Reputation!*

Taylor quality is built in — from processing of the finest rags, through every step of production under strict laboratory control until it is properly aged — to insure high dielectric strength and unusually long life under all service conditions.

Use *TAYLOR BONE GREY FIBRE* for slot wedges, spacers, tools and every other use requiring a hard, vulcanized fibre that won't delaminate.

Use *TAYLOR RED FIBRE* for every general need around the shop.

Quick shipment of every order can be made from warehouse stocks.

Samples and Prices Sent On Request

GILES ELECTRIC COILS

GILES ELECTRIC COILS

... *Dependable Long-Life Service!*

GILES ELECTRIC COILS are the kind that help you do the job right the first time to keep your customers satisfied — they fit just right — snug, yet easy to insert — are resistant to heat, moisture and high voltage — include only top quality materials to guarantee against failure — are built under careful supervision to unusually accurate dimensions.

GILES also builds special *COILS* for every need — single units or complete assemblies — wound, connected, taped — vacuum or pressure impregnated — shaped to fit any housing.

Most standard types are in stock ready for shipment. Use *GILES COILS* for long, dependable service!

Write For Giles Coil Catalog and Data Sheets!

K

KIRKWOOD COMMUTATORS

... *Built For Long Service!*

KIRKWOOD dependable *COMMUTATORS* insure against service failures. Engineered for accuracy — precision machined to bore and diameter — bars that won't throw — high grade mica — heat treated to reduce expansion and excess mica binder — *KIRKWOOD COMMUTATORS* will withstand the most severe changes of vibration, heat and speed.

Engineering skill and the finest production methods guarantee *KIRKWOOD* built-in quality.

Prompt shipment from stock can be made on commutators for refrigeration, commercial or vacuum cleaner motors, and automotive types.

Ask for Complete Kirkwood Catalog

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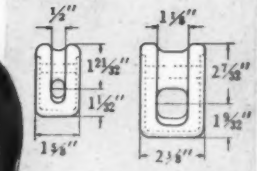
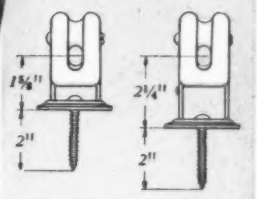
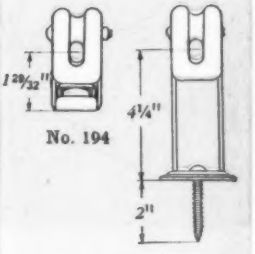
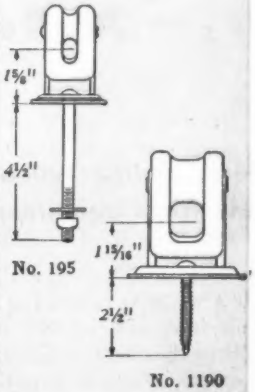
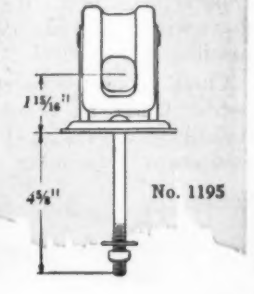
HUBBARD No. 190 WIREHOLDER











For more than 100 years, Hubbard and Company has enjoyed the privilege of serving industry with its greatly diversified products of the durable goods class.

During the latter half of this century of service, the most notable group of materials has been a complete line of Pole Line Hardware, and for more than thirty years, Hubbard No. 190 Wireholders have been produced in quantities reaching well into the millions.

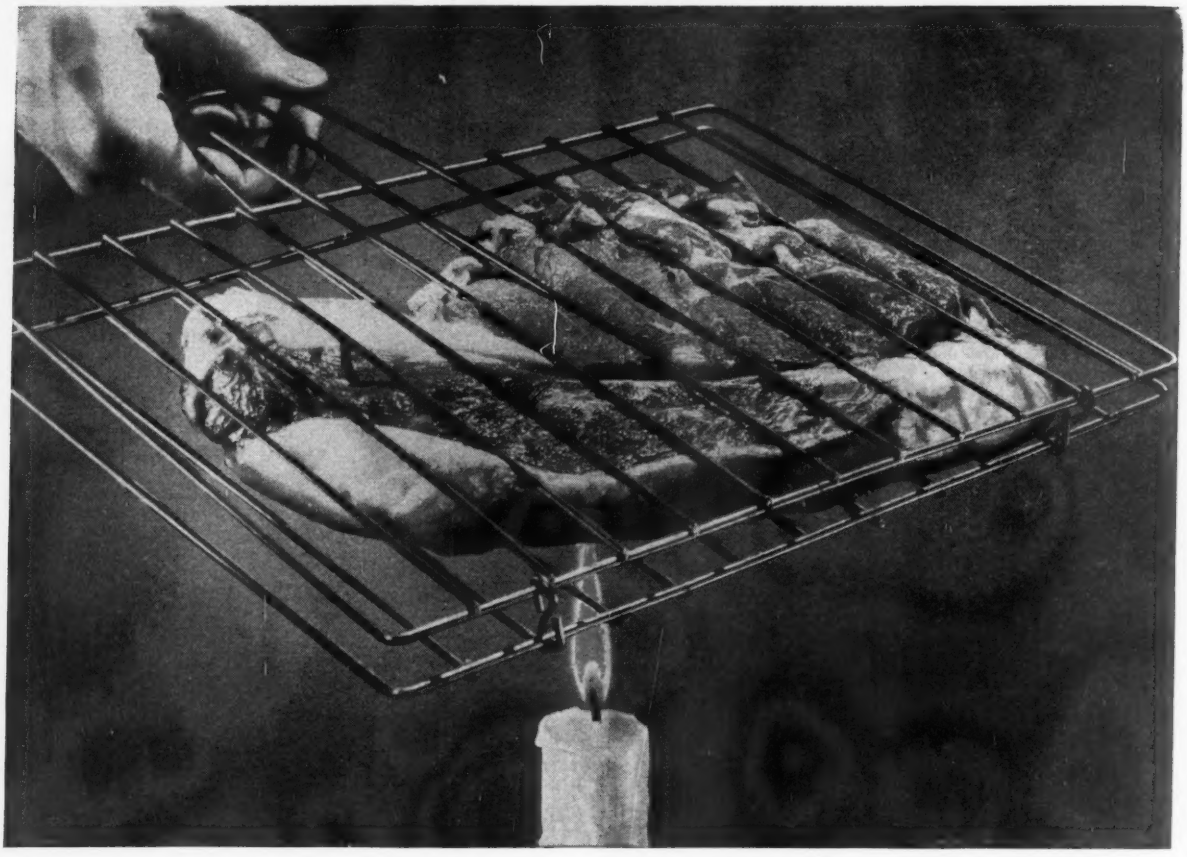
This old, reliable design with its variations shown here, is the favorite of many engineers and linemen from coast to coast. They know, that in thirty years of service, the Hubbard No. 190 has encountered every hazard to which a wireholder may be exposed. They know it has a slender pointed, full threaded screw for easy starting and maximum holding power in sheeting or solid wood. They know that its strength is much greater than that of the average service wire. They have discovered that this strength is due to the fact that the porcelain insulator is in compression with metal supports, not in tension, which is the weakest state of porcelain. They have thirty years proof that the Hubbard No. 190 has what they want in a wireholder.

Stock No.	DIMENSIONS—INCHES				Approximate Shipping Wt. Lbs., 100 Pcs.
	Insulator	Size of Screw, Bolt or Tap	Extension Base to Ctr. of Wire Hole	Size of Wire Hole	
190	1602	No. 22 x 2 Wood Screw	1-5/8	9/16 x 3/4	105
190-A	1602	No. 22 x 2 Wood Screw	2-1/4	9/16 x 3/4	115
190-R	1602	No. 22 x 2 Wood Screw	4-1/4	9/16 x 3/4	150
194	1602	5/8 Tap	1-29/32	9/16 x 3/4	95
195	1602	3/8 x 4-1/2 Carriage Bolt	1-5/8	9/16 x 3/4	140
1190	1604	No. 24 x 2-1/2 Wood Screw	1-15/16	1-1/8 x 1-1/8	228
1195	1604	3/8 x 4-5/8 Carriage Bolt	1-15/16	1-1/8 x 1-1/8	240

HUBBARD and COMPANY

PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA

Because of the basic importance of adequate wiring to the entire electrical industry, Anaconda is presenting messages like this in a wide list of national publications



A Candle Won't Broil a Steak

—and neither will inadequate wiring run electrical equipment at FULL CAPACITY

Wire ahead!

IF A MACHINE is running 1500 RPM, and it should run 1800 RPM, don't blame the operator. Chances are that *reduced voltage* is curtailing the machine's production. In fact, inadequate wiring can reduce efficiency as much as 25% to 50%!

Check up now on your *real* power needs! Don't let obsolete wiring handicap expensive production equipment. Remember that emergency alterations later may cost much more than foresighted wiring improvements today.

Talk it over with consulting or plant power engineer, electrical contractor or power salesman. They'll advise: Wire Ahead! Anaconda Wire & Cable Company, Subsidiary of Anaconda Copper Mining Company. 25 Broadway, New York 4, N. Y. Sales Offices in Principal Cities. 16230

Look to Anaconda for wire and cable controlled from copper ore to finished product by Anaconda basic research and engineering. Every Anaconda product is a lasting investment . . .

Check your wiring plans before they check you!

DON'T BE PENNY-WISE AND POWER-FOOLISH

ANACONDA **ANACONDA WIRE & CABLE COMPANY**

ELECTRICAL SOUTH

APRIL, 1946

VOL. 26 NO. 4

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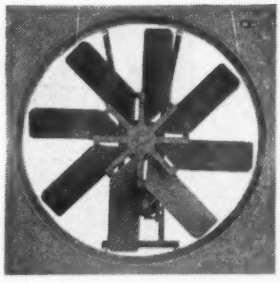
You Can Meet Tomorrow's Competition with Better Value!

PLAN AHEAD with Coolair TRADE MARK ATTIC FANS



With the severe shortage of attic fans that exists today, almost any kind of fan that will stir up a breeze can be quickly sold to waiting customers, but . . .

When the time comes that production catches up with the demand and the buyer has his choice of many kinds of attic fans, you are sure to find him placing his order for the fan that he believes offers him better value.

That's when Coolair dealers will be selling more fans than ever before because there's better value in Coolair's efficient design, high quality workmanship and materials, plus the exclusive features that assure long life and trouble-free performance.

• • •

If you're an aggressive, far-sighted business man interested in the long range opportunities in attic fans, get in touch with your Coolair distributor or write us for his name. Even though he may not be able to supply you at this time, it will pay you to get acquainted with him now and plan for the future.

A full description of the Coolair line, with tables showing models, dimensions, performance data, etc., can be found in SWEET'S CATALOG A.S.H.V.E. GUIDE ELECTRICAL BUYER'S REFERENCE

AMERICAN COOLAIR CORPORATION . . . Manufacturers

3604 MAYFLOWER STREET

JACKSONVILLE 3, FLORIDA

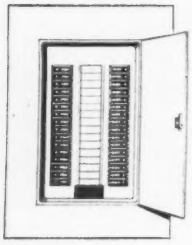
Frank Adam

A NAME KNOWN FOR QUALITY

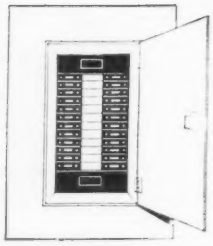
for more than half a century

PANELBOARDS

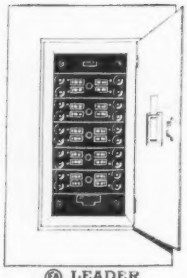
FOR OFFICES, FACTORIES, INSTITUTIONS, GARAGES AND COMMERCIAL BUILDINGS



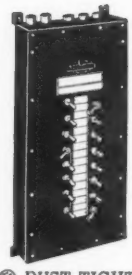
Ⓐ Type AC THERMAG Circuit Breaker



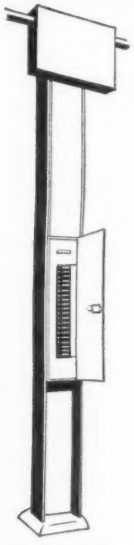
Ⓐ DUBLBRAK Type Circuit Breaker



Ⓐ LEADER Type LNT1P Fuse and Switch



Ⓐ DUST-TIGHT Circuit Breaker for Lighting or Power

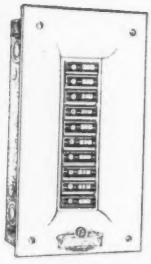


Ⓐ COLUMN Type Circuit Breaker

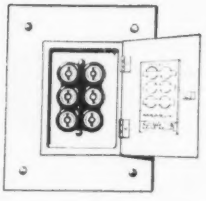
LOAD CENTERS OR SERVICE EQUIPMENT

FOR HOMES AND OTHER SIMILAR SIZE BUILDINGS

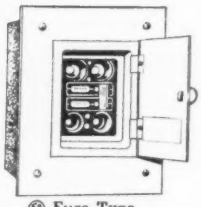
Ⓐ Type AC Circuit Breaker SERVICE EQUIP. with double pole range circuit



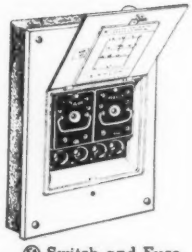
Ⓐ Type AC Circuit Breaker LOAD CENTER with all single poles



Ⓐ Type F B X Fuse Box



Ⓐ Fuse Type SERVICE EQUIP. with main switch



Ⓐ Switch and Fuse SERVICE EQUIP. with main switch and range or heater switch

The Ⓐ Panelboards shown above are some of the most popular types we design and manufacture. All Ⓐ Panelboards carry the Underwriters' seal of approval and in general exceed material, workmanship and design standards by a wide margin. We also manufacture a complete line of power distribution panelboards and stage and auditorium lighting control panels.

Ⓐ Load Centers and Service Equipment are available now in many types and with any number of circuits up to a maximum of sixteen poles. We suggest that you urge your customers to install at least two extra circuits for those electrical conveniences they are waiting for now. Write today for free bulletins on Panelboards and Service Equipment.

FRANK ADAM ELECTRIC CO.

Box 357 **ST. LOUIS 3, MO.**

Television: South to Share

Projected methods of linking stations make television service a possibility even for isolated farm houses.

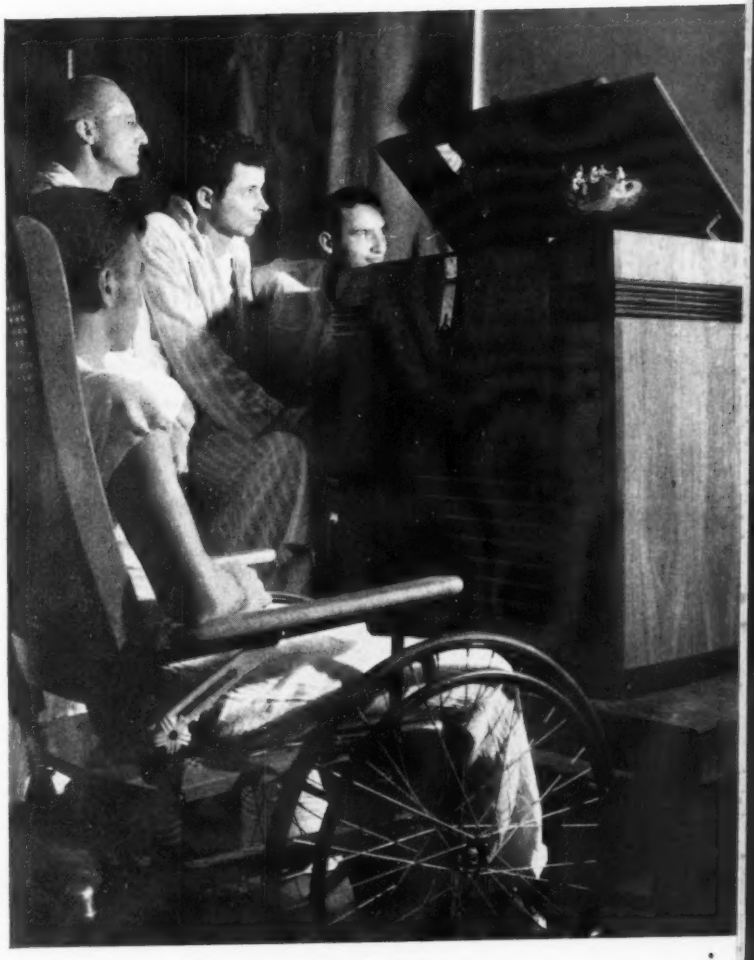
THE DEVELOPMENT of television is unique in the history of industry. Never before has a new science and art been benefitted by the expenditure of such tremendous sums on research and development before commercial exploitation even began. It is estimated that more than 25 millions of dollars have been invested in television development, and one company alone claims to have already spent 10 million dollars.

The development of television is unique because when it is finally presented to the public it will be as a mature, successful development, and the public will be saved much of the "field" research that it contributed in the case of the automobile industry, the radio industry, and many others.

Today, an impatient public is beginning to ask "How long?" And a variety of answers is being given in popular and business magazines. It appears that despite the rapid technical development and the tremendous progress that has been made, there are still some imposing problems to be solved before a large segment of the public can settle down in their easy chairs to enjoy the panorama of news, sports, plays, travelogs, cartoons, political conventions, and countless other diversified programs that will surely materialize.

Among the problems that are still to be solved is whether to proceed with the standardization of television in black-and-white or to wait for the development of satisfactory color; and how to present a high quality of program material on the slim budget that will be available from commercial sponsors at the start.

These are important problems, of course, but to the electrical industry of the South a much more important problem was whether television was ever to be available to the extensive southern and southwestern regions where large metropolitan centers are few and far apart. Fortunately, considerable research has been devoted to the problem of linking television and FM broadcasting stations for coast-



Attending public activities in pajamas and bathrobes is usually considered taboo, but it's the privilege and pleasure these days . . . thanks to television . . . of wounded service men confined in several hospitals in the New York area. To give the boys in hospital wheel chairs and beds a break, 55 television sets have been installed in seven hospitals in and around New York City. The day draws nearer when this service will be available commercially to most of the principal trade centers in the rest of the country.

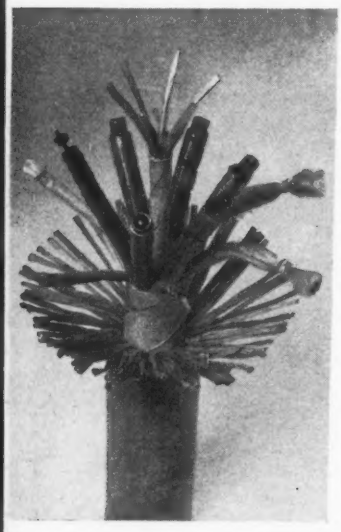
coast service with the result that these services may be available to even the most isolated farm homes.

The Federal Communications Commission has already allocated channels for one or more television stations in 51 marketing areas of the South and Southwest. The marketing area and the number of channels allocated are given in the following tabulation:

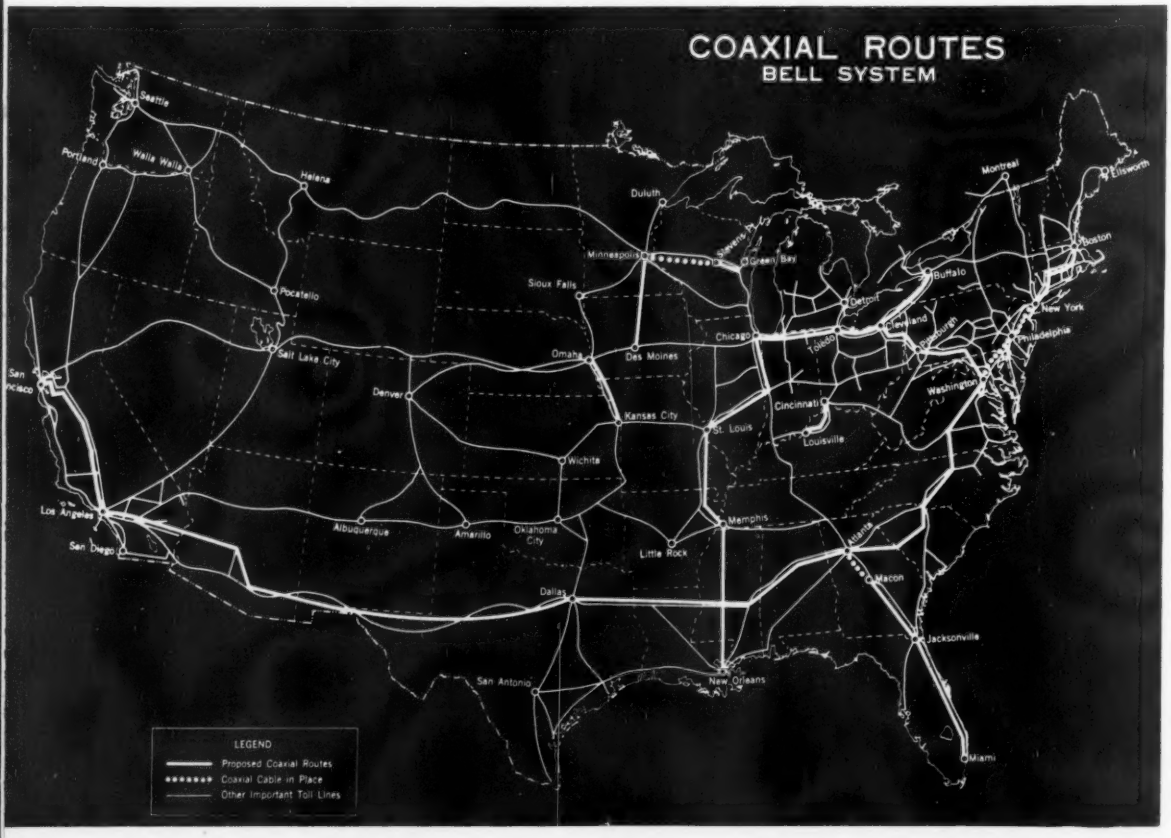
Amarillo	4	Knoxville	4
Asheville	3	Little Rock	4
Atlanta	4	Louisville	2
Augusta, Ga.	2	Macon	3
Austin	3	Memphis	5
Baltimore	3	Miami	4
Beaumont	4	Mobile	4
Birmingham	3	Montgomery	2
Charleston, S. C.	3	Nashville	4
Charleston, W. Va.	3	New Orleans	5
Charlotte	3	Norfolk	4
Chattanooga	4	Oklahoma City	4
Columbus, Ga.	2	Richmond	4
Corpus Christi	4	Roanoke	3
Dallas	3	St. Louis	5
Durham	2	San Antonio	5
El Paso	4	Savannah	4
Fort Worth	3	Shreveport	4
Galveston	3	Springfield, Mo.	4
Greensboro	2	Tampa	4
Houston	4	Topeka	2
Huntington, W. Va.	1	Tulsa	4
Jacksonville	4	Waco	4
Kansas City	4	Washington	4
		Wheeling	1
		Wichita	4
		Winston-Salem	2

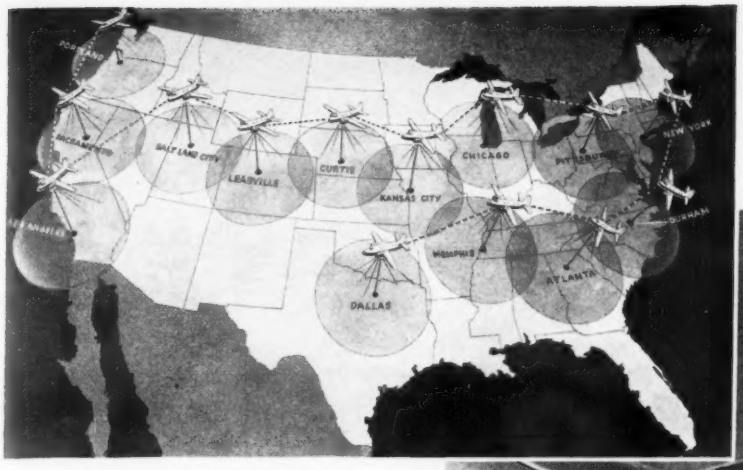
Many of these channels have been tentatively assigned to applicants by the FCC. For example, three of the four channels available in Washington, D. C., have already been tentatively assigned, and, if sets are available as many experts declare they will be, Washington will have some real television by late summer.

Three methods of linking television stations for chain-type programs have been developed and experimental research is being conducted on all three. One method would utilize a network of "coaxial" cables that are being installed by the American Telephone and Telegraph Company, the coaxial cable being a special copper tube capable of carrying radio frequency waves in much the same manner as a wire carries telephone messages. Another method would utilize a chain of radio

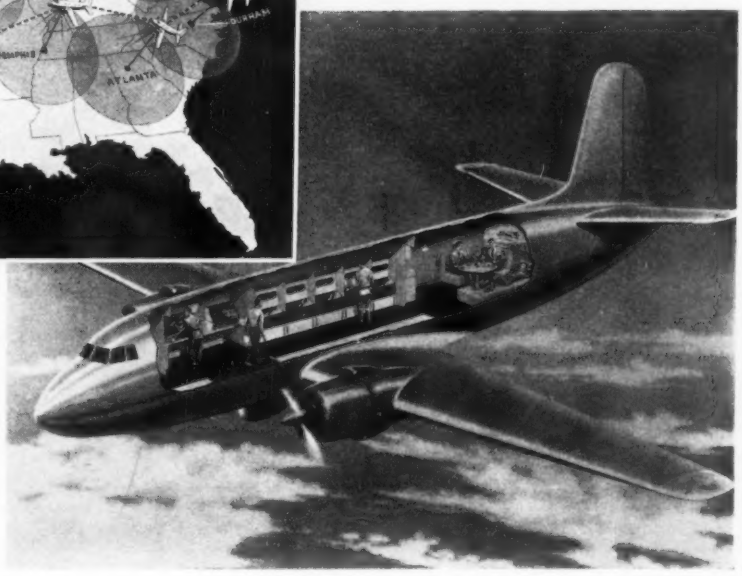


One of the problems facing the television industry is how best to link the stations throughout the country for chain type program transmission. Three methods have been proposed: coaxial cable systems; radio relay towers; and the "Stratovision" system, which will utilize relay planes flying at great heights. At the left is an opened up section of the coaxial cable which was actually used to carry a television program recently from Washington, D. C., to New York City. Shown in the center of the cable are the six copper tubes which make it possible to transmit television images or hundreds of telephone conversations. Below is a chart showing the proposed coaxial cable installations of the American Telephone and Telegraph Co. The map does not show the most recently completed sections of coaxial cable—more than 1,500 miles have been installed.





The Stratovision system of television relay broadcasting, developed by Westinghouse and Glenn L. Martin Co., would require only eight planes to span the continent. Fourteen planes would cover 78% of the nation's population. The system is based on the fact that while the highest practical tower transmitter will cover an area only 100 miles across, a transmitter in a plane 30,000 feet in the sky will cover an area more than 400 miles across. Tests indicate that less power is required with high antennas.



Cut-away view of one of the special planes developed by Glenn L. Martin Co., in cooperation with Westinghouse for Stratovision. They are about the size of the famed B-29 but only one-third as heavy. Two planes would be required in air at each station to provide continuity of service in case of trouble on one plane.

relay towers which would permit the rebroadcasting of the television signals from tower to tower across the country. A third method would utilize a chain of high flying planes which would relay the television signals from plane to plane across the country, with each plane also serving as a telecasting station covering an area of some 400 miles across.

The coaxial cable making up the long distance network contains special copper tubes capable of carrying radio frequency waves. Each of these tubes is about the size of a lead pencil, with a single wire held in its center by disc insulators. Such a coaxial pipe provides a private path through the ether in which radio waves can be guided, instead of spreading in all directions as in ordinary radio broadcasting. Because of the restricted conditions within the pipe, these radio waves weaken very rapidly as they travel and must be strengthened by vacuum tube amplifiers at intervals of about five miles.

The terminal equipment involved in the coaxial cable includes many complicated electronic devices which have been developed in the Bell Telephone Laboratories in the course of their researches on long distance telephony. By means of this equipment, it is possible to select from the frequencies transmitted over the coaxial cable any one of a number of "programs" (or telephone messages) in the same way in which programs can be selected on a home radio receiver. In this way, it is possible to secure 480 separate telephone message paths over a single coaxial pipe. To provide large numbers of long distance telephone circuits, such cable is now being installed on important long distance routes of the United States.

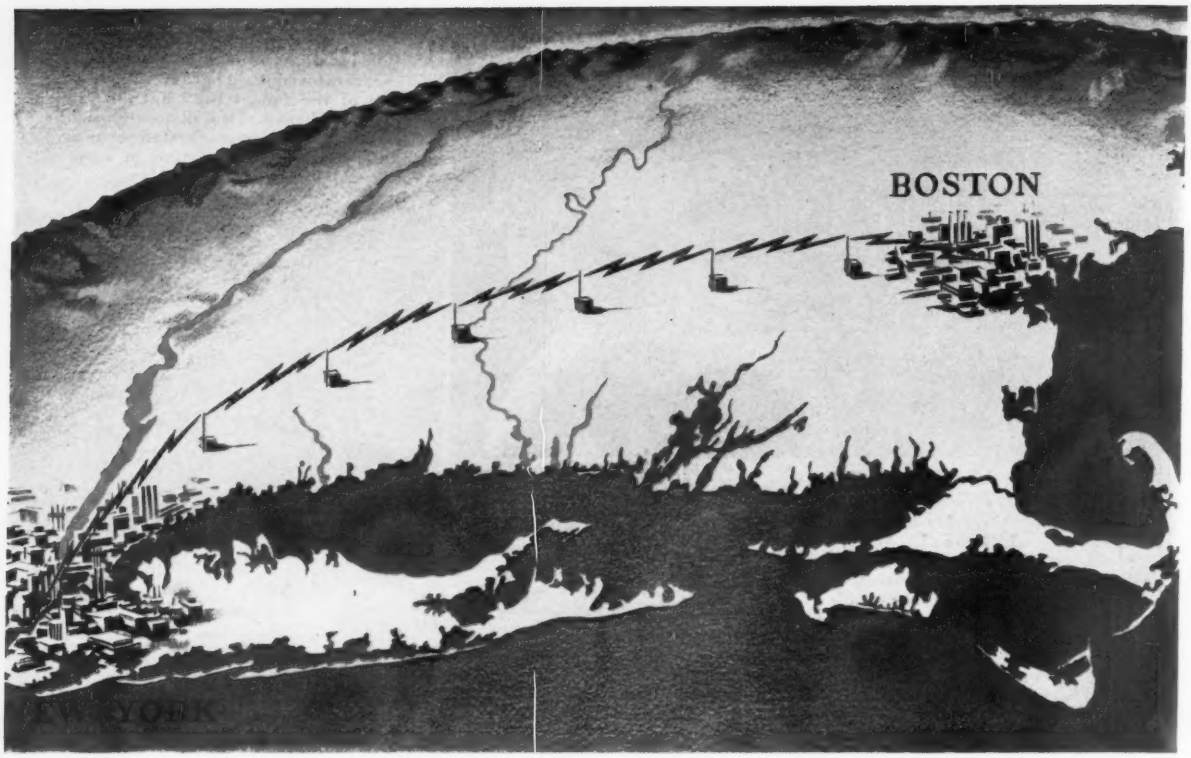
Television broadcasting requires a very wide band of radio frequencies—about four times the total frequency band which is allocated to all the radio broadcasting stations in the country. If the frequency band carried along a coaxial pipe is transmitted as a whole, instead of being broken up into hundreds of telephone circuits, coaxial cable can carry the complex signal necessary for television.

The Bell System's coaxial program calls for the construction each year for the next few years of upwards of 1,500 miles of coaxial cable suitable for carrying hundreds of long distance telephone conversations, or television. In 1946, for example, the cable network will be extended south of Washington to Charlotte, N. C., as well as between Atlanta and Dallas, while in 1947 the coaxial project will link Chicago and St. Louis and the southern route will be extended to Los Angeles. The accompanying map shows the network of coaxial projected at the present time, a considerable part of which has already been completed.

Another method for transmitting multiple telephone channels and television, called radio relay, is under development by Bell telephone engineers. An experimental radio relay system is now being built between New York and Boston. The project will require at least two years to complete and will cost about $2,000,000.

This method applies to communication by radio many of the techniques which have played an important part in the development of long distance wire telephone circuits. Directed radio beams at ultra-high frequencies will operate simultaneously in both directions, and these will be relayed at stations spaced about 30 miles apart.

Fortune Magazine in an article on television in its February, 1946, issue reported that Philco and General Electric, in conjunction with the International Business Machines Corp., have constructed experimental radio relays along the eastern seaboard, while Raytheon and Globe Wireless are laying plans to string a series of relay towers across the country. Western Union has announced plans for such a sys-



A third possibility for linking television broadcasting stations for chain programs is the radio relay system. This diagram illustrates how New York and Boston will be linked by a radio relay system of the American Telephone and Telegraph Company. The experimental system will supplement present long distance telephone wire lines and will provide facilities for transmission of television programs. Several electrical manufacturers are reported to have plans for the installation of a string of relay towers across the country.

tem to carry telegraphic messages.

Plans to inaugurate a new system of television and FM radio broadcasting from stratosphere airplanes cruising six miles in the air, as soon as permits and equipment can be obtained, have been announced by the Westinghouse Electric Corporation.

Initial flight tests of the system, known as Westinghouse Stratovision, are expected to be made this fall, it was disclosed by Walter Evans, Westinghouse vice-president in charge of all the company's radio activities.

"If as successful as all our specific information and ultra-shortwave experience indicates it will be," Mr. Evans stated, "Stratovision would make coast-to-coast television and FM broadcasting possible at a reasonable cost, and would permit these services to be broadcast to even the most isolated farm homes many years ahead of any previously suggested system.

"This would be done by reducing the astronomical expenditures which have hampered all earlier concepts of nation-wide television service."

The Stratovision system was originated by C. E. Nobles, 27-year-old Texas-born Westinghouse engineer with several highly confidential radar developments to his credit. The system was further developed by the Westinghouse organization in cooperation with The Glenn L. Martin Company, pioneer aircraft designers and builders.

Mr. Evans announced that application has been filed with the Federal Communications Commission for permission to make actual flight tests of the system whose advantages he described this way:

"Television and FM radio waves travel in a straight line and for all practical purposes stop at the horizon. This means that television broadcasts from the highest practical tower erected on the ground cannot be received much more than 50 miles away.

"The Stratovision system simply puts the antenna and transmitter in an airplane flying in lazy circles 30,000 feet above the earth, out of sight of human eyes. The shortwaves sent out from this airborne antenna would blanket the earth's surface like a great inverted cone, covering an area 422 miles across or equal to about the combined area of New York, Pennsylvania and New Jersey.

"Reception of Stratovision broadcasts would be practically free from interference and distortion, caused normally by reflected ground waves and the numerous amplifications or relaying stages required by any previously proposed system to carry television and FM broadcasts over a comparable area."

Supporting his claim that the Stratovision system is the most economical one yet proposed, Mr. Evans disclosed the startling fact that as the height of a television or FM antenna is increased the amount of power required to deliver a useable signal to a receiver is sharply reduced.

"To provide a useable signal throughout a 422-mile-wide receiving area covered by a plane-borne transmitter 30,000 feet in the sky," he said, "would require only one-fiftieth as much power as is needed by a 50-kilowatt transmitter on the ground covering an area only 100 miles in diameter."

The Westinghouse Stratovision system would employ a low-powered ground transmitter to send television

(Continued on page 32)

PRE-SELLING CAMPAIGN ON RANGES

Union Electric announces promotional campaign to sell idea of electrical cooking. Plan also includes generous allowance on range wiring where installation meets specifications.

A COMPREHENSIVE "pre-selling" campaign to promote electrical cooking during this period when only a trickle of electric ranges are coming from production lines has been undertaken by the Union Electric Company, of Saint Louis, Missouri.

The entire campaign is designed to sell an idea—*flameless* electric cooking. The dealers are invited to tie in with this campaign by means of window strips and counter cards, floor and window displays built around the idea of flameless electric cooking, store demonstrations by home economists available from Union Electric, and sales training that will permit the dealer to capitalize on the pre-selling advertising as soon as ranges are available in quantity.

Outstanding features of the program are financial assistance for range wiring that amounts to as much as $40.00 per installation in some cases; a dealer counselling service; and a staff of 16 skilled home economists, professionally trained to sell the superiority of electrical cooking. The program is under the direction of Robert L. Coe, residential promotion manager.

Weekly "Paging the Lady" demonstrations are playing to packed auditoriums at the company's Saint Louis, East Saint Louis, and Alton headquarters.

The Union Electric Company's promotion will include Market Creation by a publicity campaign through radio, newspaper, billboard, and other forms of advertising; personal contacts with customers through the company's large staff of residential representatives and home economists; educational classes for dealer sales people; demonstrations of electric cooking on company's premises and in dealers' stores; cooperation with distributors and dealers in their independent promotional and sales operations, and financial assistance extended to the industry through the distributors to help overcome sales obstacles.

Financial assistance is offered by company only in the case of the sale of a new approved electric range for the operation of which a wiring installation is necessary in the customer's home and such installation has been made. It is made primarily for the purpose of enabling distributors to overcome the sales obstacle which the wiring problem presents to the dealers. Each distributor has full liberty to utilize the financial assistance received from the company in any manner in which he believes he can promote the maximum sale of electric ranges to our domestic customers, providing that all financial assistance received under this plan is used exclusively for promoting the sale of electric ranges.

Under this plan, the company offers to qualified distributors the following contribution: for full installation in existing building, $40.00; for partial installation in existing building, $25.00; and for full installation in new building, $25.00.

These amounts apply to the Saint Louis, East Saint Louis, and Alton districts. Allowances are slightly less for installations in outlying districts.

ELECTRIC NEWS
march 1946
a pre-selling campaign on
flameless
electric cooking
for more news of this big "hard-hitting" campaign, turn the page... see how you can tie in your sales story

An attractive visualizer 12"x17" announces the details of the pre-selling promotional campaign.

The allowances given above are for each dwelling unit.

The financial assistance to be paid by Company to distributor is based upon a complete or partial wiring installation, and the installation of an approved new electric range connected ready for operation in residential premises which is normally occupied throughout the year and which receives electric service from company's system. In the case of summer cottages, private clubhouses, and similar structures of part-time occupancy, the amount of financial assistance shall be one-third of the amount set forth above.

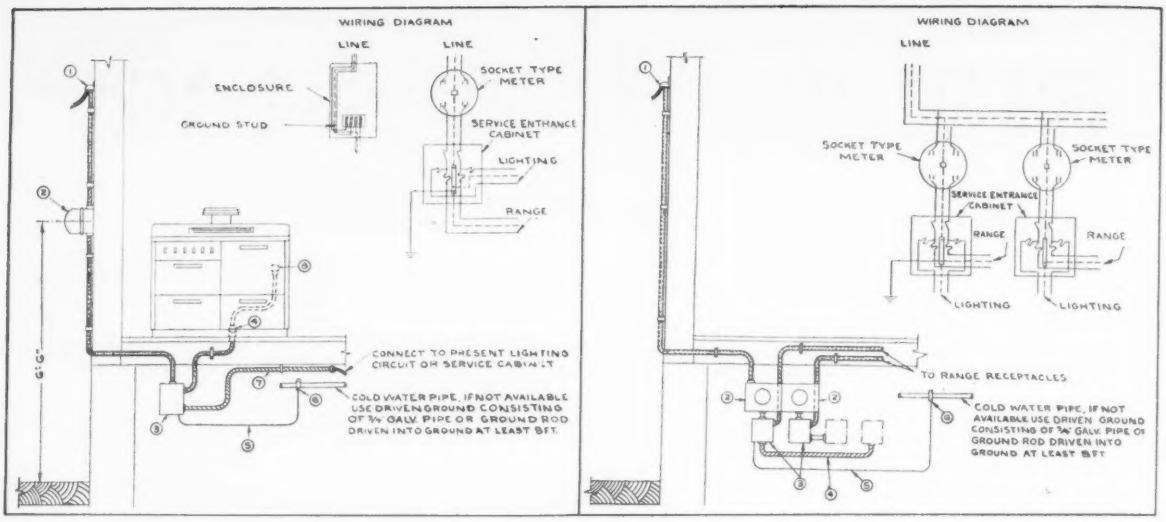
Financial assistance is offered in the case of only one range installation for each dwelling unit. Financial assistance is not offered for changes in existing electric range wiring installations.

For the purpose of this plan, a new building is considered to be one *in which the range wiring installation was made at the time of construction.* Financial assistance in the case of such new buildings is offered only if an approved electric range is installed within one year after initial occupancy.

All arrangements for wiring installations on customers' premises must be made by the distributor or under a plan which distributor will set up for the benefit of his dealers. Union Electric Company will not arrange for any wiring installation or select the contractor to make such installation.

The company cooperates with distributors in giving information about the plan to dealers. However, the dealers must look to the distributor, and not to the company, for the making of arrangements for the installation of wiring. The contractors must look to the distributors for the securing of wiring business. The company makes no payments direct to either the contractor or the dealer—all such payments are made to distributors only.

The operation of such a plan, of course, required definitions of such


WIRING DIAGRAM
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LINE
SOCKET TYPE METER
ENCLOSURE
GROUND STUD
SERVICE ENTHANCE CABINET
LIGHTING
RANGE
CONNECT TO PRESENT LIGHTING CIRCUIT OR SERVICE CABINET
COLD WATER PIPE, IF NOT AVAILABLE USE DRIVEN GROUND CONSISTING OF ¾" GALV. PIPE OR GROUND ROD DRIVEN INTO GROUND AT LEAST 8FT.
WIRING DIAGRAM
LINE
SOCKET TYPE METER
SOCKET TYPE METER
SERVICE ENTRANCE CABINET
RANGE
RANGE
LIGHTING
LIGHTING
TO RANGE RECEPTACLES
COLD WATER PIPE, IF NOT AVAILABLE USE DRIVEN GROUND CONSISTING OF ¾" GALV. PIPE OR GROUND ROD DRIVEN INTO GROUND AT LEAST 8FT.

At left is the Union Electric Company's electric range wiring standard for single family dwellings. The materials indicated by the encircled numbers are: (1) entrance fitting; (2) meter socket or enclosure furnished by the company; (3) service entrance cabinet; (4) range receptacle; (5) ground wire; (6) ground clamp; (7) subfeed to present lighting circuit or service cabinet; and (8) range plug and cord. The standard for multi-family dwelling electric range wiring with multi-metering is shown at the right. Numbers have the same designation except that (4) in this drawing is the subfeed to present lighting circuit or service cabinet.

terms as "qualified distributors," "approved ranges," and "wiring installations."

Under the company's plan, any authorized distributor or manufacturer's local representatives of approved electric ranges is qualified to secure the benefits of this promotional operation, provided there has been established in the territory a service agency with trained personnel and an adequate supply of parts for the servicing of the electric ranges sold by the distributor.

An "approved electric range" is one of good quality that is new and in good operating condition, has an aggregate capacity in heating units of not less than 6300 watts, is equipped with a cord and plug, and is completely wired and tested ready for installation in a customer's premises; and the manufacturer or distributor of the approved electric range maintains an adequate stock of replacement parts for electric ranges of the same manufacture and trained personnel to service all electric ranges of the same manufacture.

Each electric range must be approved by the individual model and prior approval of similar models is not considered approval of a current model.

A "range wiring installation" is an installation made in compliance with municipal codes or National Electric Code, whichever applies, in the manner indicated in the company's electric range wiring installation specification, and in accordance with the company's service entrance regulations. A complete installation is one requiring the installation of all equipment and materials included in the company's electric range wiring specifications. A partial installation is one in which such complete facilities are not installed. However, the company gives no financial assistance in cases in which only the installation of an electric range receptacle is required.

The electric range wiring installation specifications adopted by the Union Electric Company are as follows:

1. Introduction. These specifications cover the methods and general type of materials to be used for electric range wiring installations on A.C. services.

2. Workmanship and Material. Workmanship and material shall be first class in every respect.

3. Inspection. In the City of St. Louis, East St. Louis, Alton, Iowa Divisions, and in municipalities having their own code authority, all wiring shall be subject to inspection and approval by their inspectors.

In St. Louis County, where local code does not apply, wiring shall be inspected and approved by the St. Louis Fire Prevention Division of the Missouri Inspection Bureau.

In all other locations, wiring to meet the requirements of the National Electrical Code.

4. Use of Existing Wiring. Existing wiring on premises which is in good mechanical and electrical condition may be used providing it is of sufficient size to meet code requirements and the approval of the inspection authorities having jurisdiction.

5. Installation:

5.1. Service Entrance Circuit. The point of entrance shall be located on the exterior of the building nearest the company's lines in such a position that service can be given through the use of a single set of wire attachments on the building. Service entrance conduit or cable shall be cemented where run through a brick wall. Size of service entrance wires shall be determined in accordance with the National Electrical Code and local wiring regulations. The service entrance switch shall have terminals for the connection of a water heater circuit.

5.2. Mounting of Service Entrance Equipment. Meter device when mounted outdoors, shall be securely fastened to the building with two screws and located so as to be readily accessible to Company's employees at all times. All electrical material and apparatus shall be firmly secured to the surfaces upon which it is mounted. Wooden plugs driven into masonry shall not be depended upon for such security.

5.3. Range Circuit. Size of wires to be determined in accordance with National Electrical Code and local wiring regulations.

5.4. Wiring Plans. The general

(Continued on page 78)

Good Display Facilities "Must" for New Dealer

Supporting columns on the display floor of the Moore Appliance Corp., of Miami, were changed from a liability to an asset by installing two step display fixtures around the columns as shown here. Linoleum covers with bright metal bindings make the fixtures attractive. Howard M. Wygant, general manager of the company, arranges a display.

TAKING a long-range viewpoint, the principals of Moore Appliance Corporation, Miami, Fla., believe that, despite a shortage of merchandise for immediate delivery, the present offers an excellent opportunity to lay the ground work for future electrical appliance selling. And they believe strongly that well-planned and attractive window display is one of the most effective means to this end.

"Attractive display facilities," explained Paul W. Moore, president, "are a valuable asset to the old established dealer. To comparative newcomers in the business, as we are, they seem to be a definite 'must.'"

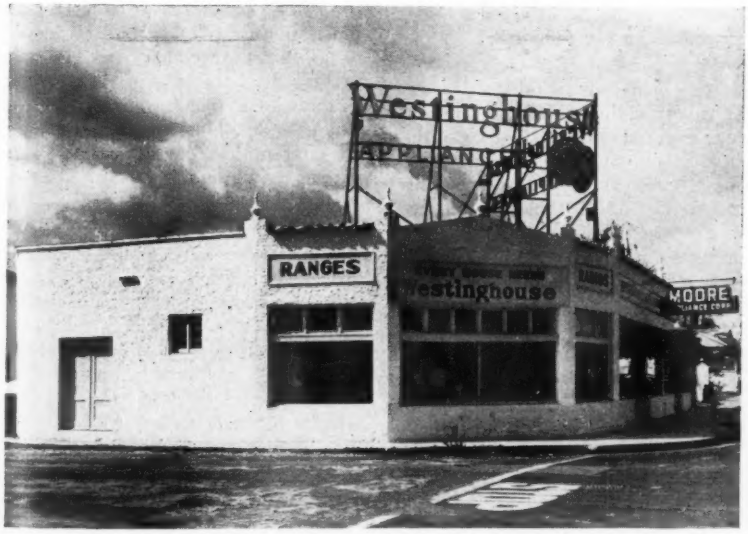
In the modernizing operation the firm performed on an old store structure, shortly after its organization, something less than a year ago, in order to adapt it to their intended use, the company provided for a battery of five display windows—four singles and one double-width. They have tied these into their over-all merchandising blueprint by keeping them in constant use. What appliance samples they have been able to obtain are so displayed that they cannot fail to attract.

"Our original thought, in regard to these window displays," explains Mr. Moore, "was to use them, chiefly, for promotional purposes. Due to the present production situation, however, we have been employing them for 'Institutional' advertising. Yet, we have found that they serve a promotional function, too."

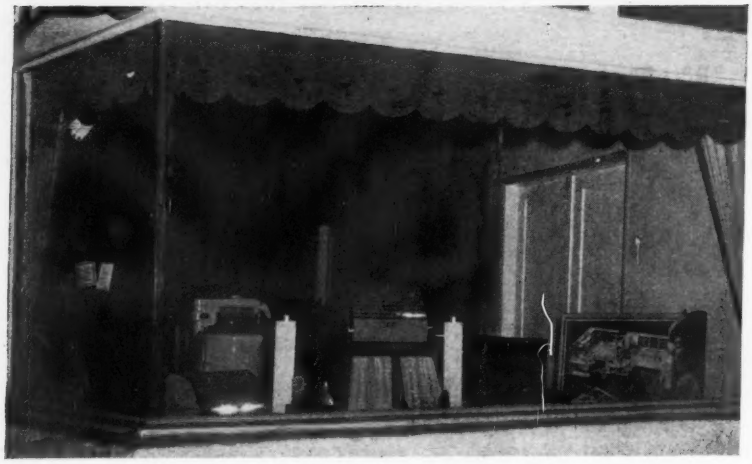
By careful observation, Mr. Moore has learned that women customers who come into the store during the daytime, frequently bring their husbands to view the window displays at night. And many of them return at a later date, to place orders for future delivery. This has encouraged the firm to keep window lights on until 11 p.m. Each single window and each section of the double window is illuminated by three 40-watt fluorescent lamps mounted in a triple fixture.

In choosing its location, in the heart of a busy community shopping center, the concern did so with an eye to capitalizing on the traffic passing along the main travel artery, on which the store fronts. Automotive traffic flows past in an almost endless stream, from early morning to late evening. During the daytime, pedestrians—mostly women—pass by on their way to and from food and other stores nearby. At night, a "neighborhood" theater, drug-sundry stores and eating places, close by, draw large mixed crowds.

The firm's most recent window showing consisted of two displays featuring small appliances and one, each, devoted to lamps, radios and electric water heaters. For all these windows, the color scheme and the trimming technique were the same.



The Moore Appliance Corporation remodeled an unsightly old building into an attractive appliance sales and service store, with an eye for capitalizing on the traffic along the main travel artery, on which the store fronts. Two large electric signs on the roof attract attention.



Crepe paper valances hanging down a short way from the window tops, and triangular pieces to fill in the upper window corners make the displays particularly pleasing to the eye. The color scheme is emerald green and canary yellow, harmonizing with the walls and ceiling. Space heater, irons, and vacuum cleaners are featured in this display.

Small appliances, such as toasters, razors, etc., were featured in the double-width window in one of the firm's most recent displays. Each item was given individual prominence by being placed on a separate pedestal. The "individuality" effect was heightened by varying the shape and size of the pedestals and the color of their crepe paper coverings.

Crepe paper valances hung down a short way from the window tops, and triangular pieces of the same material filled in the upper window corners. The color scheme used was emerald green and canary yellow, harmonizing with the light green and cream of the store's walls and ceiling. These can be seen over the low backing at the rear of each window, as can the merchandise displayed inside.

The merchandise shown in the double-width window included electric mixers with bowls, broilers, toasters, electric razors, bottle warmers and beverage blenders.

Each item was given individual prominence by being placed on a separate pedestal. The "individuality" effect was heightened by varying the shape and size of the pedestals used and the color of their crepe paper coverings. These matched, either the green valance or canary yellow side drapes.

Another device employed for marking an item for special attention was the use of a crepe ornament, such as a rosette, on the pedestal covering. All such devices tend to catch the eye, and fix the attention of the looker on the merchandise item shown.

The second small appliance window contained electric space heaters, irons, and vacuum cleaners. One neat bit of showmanship in this display was the arrangement of a vacuum cleaner accessory kit on a bed of crumpled crepe paper to highlight the use value of a cleaner shown.

The displays in this window battery were the work of a professional window display service concern, with which the company has a contract. The latter calls for a monthly change of trim and merchandise arrangement. Thus, the displays always are fresh and attractive. Practically all large and most moderate-size cities have professional display services.

"We are convinced," reports Mr. Moore, "that our window displays have a very definite business building value. For one thing, they keep the people in our own section and those from other areas who pass by, constantly reminded of the fact that we are electrical appliance dealers. For another thing, we have on our books a very nice listing of orders for future delivery, amounting to approximately $40,000 and due, in considerable degree, to these displays.

"On Saturday evenings, we have had as many as fifty families in the store at one time. All seem to be potential appliance buyers. And, by the law of averages, a good percentage of those we haven't signed up already we should sell later."

Though every dealer cannot afford a new building, many unsightly buildings can be converted into modernistic appliance stores. The Moore company acquired an old, 50 by 90 foot store structure which had previously housed five separate businesses of as many different types. Because of its unsuitability for the purpose intended, a major remodeling job was in order. During the remodeling, the importance of display was kept foremost in mind.

The roof-support pillars were of wood, termite-eaten and in poor condition. These were removed and replaced by steel columns. The partitions separating the original store spaces, were taken out entirely. The floor which was of different levels was pulled up, and a concrete floor was substituted. Old and patched electrical wiring gave way to a brand new wiring system especially designed to meet the needs of the new occupant.

The structure's whole front was rebuilt, with the large display windows planned as described previously. Since the building has a corner loca-

(Continued on page 76)

School and Office Lighting Study Leads to New Fixture Design

REVERSING the usual process of designing a lighting fixture and studying its installation possibilities, the F. W. Wakefield Brass Company has just completed a comprehensive study of the lighting needs in offices, schools and drafting rooms and, with this information as a guide, has developed a fixture specifically for these occupancies.

The study has led to the development of a new fluorescent indirect lighting unit which the manufacturer has designated the Star. Provided with a translucent molded reflector to give substantially the same brightness as the ceiling, the new units provide a sky effect of evenly distributed light with no deep shadows or sharp contrast, and with complete lack of glare.

Particular consideration was given to minimum maintenance cost and maximum maintenance ease, as well as interchangeability of parts and rigidity of construction in the design of the new unit.

Because the studies made in connection with the design of this new unit are so fundamental in nature, they should prove of interest to lighting salesmen, lighting engineers, and electrical contractors.

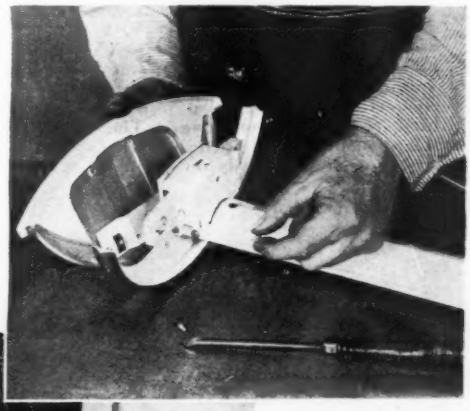
Drafting Rooms

In a drafting room requirements are critical. Here all phases of good lighting must be present. Four major requirements stand out. If even one is absent the result is not satisfactory: (1) higher intensity on the working surface than in the average interior; (2) a minimum of reflected glare; (3) a minimum of direct glare from the ceiling, from the walls, and from the source of illumination; and (4) no objectionable shadows.

Intensity: In a drafting room detailed work is done over large surfaces. This detailed work includes very fine lines and other accurate requirements. Higher intensity of light is needed on the working surface than for general office work, such as reading, typing, and so forth.

Minimum Reflected Glare: Intensity if accompanied by reflected glare from the working surface is absolutely useless to the light user. Regardless of how much light is put on a working surface, if reflected glare is present, the useable light is very slight. Equipment must get light onto the working surface with as much dif-

Step-by-step installation details for the new indirect fluorescent lighting fixtures are given below and on the following page. Step 1. (Left) To mount a continuous row of Stars, the mounting strap is first secured to the outlet box and a chalk line is run along the ceiling to insure a straight mounting line. The electrician then measures off the distance for the location of the second strap and succeeding straps for the run. Step 2. (Center) Inter-connecting is carried out by the unit connector which consists of a heavy steel strap with which the units are held together by means of a locking device and screws. This also supplies the stem supports between units in the run. Succeeding units are locked over this strap. Step 3. (Right) A housing cap is snapped over the end of the channel to close the wireway. Transluscent molded end caps are assembled to reflector supports.



fusion as possible. That requires a large area of light at the source. By blending the lighting equipment into the ceiling such a large area source is obtained.

Minimum Direct Glare: By direct glare is meant a glaring ceiling, glaring wall, or glaring lighting unit within the line of vision; and by glaring is meant sufficient brightness to cause squinting or discomfort.

This calls for a light source so shielded that it blends into the ceiling. The ceiling must receive such a diffusion of light that it becomes pleasant. Walls should receive a diffused light without a sharp contrast so that they are "comfortable."

Thus the draftsman is not bothered by outside glare sources which affect his eyes and also the work he is doing.

Absence of Shadow: It is uncomfortable, therefore, objectionable, to look at a ruler or a drawing and find that the hand, pencil, ruler, or other tool is casting a shadow.

This calls for a lighting source which gives no sharp, direct glare either from the source itself or from any other reflecting medium.

To these requirements for a drafting room must be added: A lighting job is not merely for a few hours but day in and day out. Therefore, equipment must be easily cleanable at little expense in order to keep lighting efficiency at a maximum.

Step 4. Stem assemblies are screwed into a movable stem clamp located at ends of runs and into the unit connector. The assembled unit is then ready for mounting. The flared stems are slipped into the first two straps already on ceiling.

Schools

The school room has much the same requirements as the drafting room. Detailed work is performed in each. But there are additional considerations in the lighting of a school room.

The school room is an office type of interior for educational purposes. Both require desk work, though not usually as exacting as in the drafting room. But in addition, the student working at the desk also looks up at a blackboard, wall chart, or tack-board, works part time at the blackboard, stands and recites, or moves around the room, using immature growing eyes in each case.

Not as high intensities are necessary on the working plane as in drafting. There should be very little reflected glare in a school room though reflected glare is not quite as detrimental as in a drafting room. The question of objectionable shadows does not enter as definitely into the school room because close detail work is not done so often. But there should be no direct glare.

The illumination of the walls is extremely important. So we must work toward the end of supplying a reasonable intensity based on the amount decided by lighting authorities. We must supply light which gives a reasonable minimum of reflected glare. But here reflected glare can be reduced by the type of desk surfaces, by the finishes, and by the type of paper used, since there are not the restrictions on classroom equipment as on equipment in a drafting room.

In a school we must consider first not shadows but rather the relationship between light and dark portions of the room. Near the windows it may be overbright, while farthest from the windows daylighting may drop materially. We must also guard against direct and reflected glare, meanwhile providing sufficient intensity.

The same elements apply generally as in a drafting room, except that in a school diffused lighting of the walls and ceiling is absolutely necessary. And at no time should excessive glare be present in the line of vision. The same type of lighting equipment should give the desired results in class room or drafting room but it would not always be necessary to use as many units in order to provide the proper intensity in the classroom.

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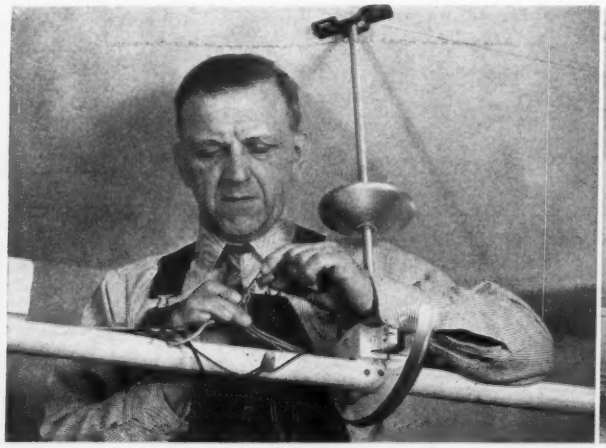

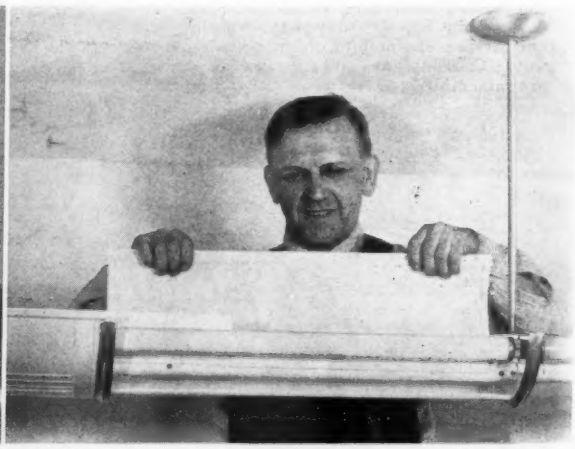

Step 5. (Left) The supporting band on the previously mounted unit provides the reflector support for the end. The 14 gauge steel channel insures rigidity for the wireway and snap-on wireway covers provide accessibility for wiring. Step 6. (Right) Molded Plaskon reflectors are easily slid into place to complete the installation after starters and lamps are inserted. This also demonstrates the facility with which reflectors can be removed.

SELF-SERVICE DISPLAY FOR SMALL ITEMS

CUSTOMER self-service and department store technique is a progressive measure adopted by Southeastern Radio Supply Co., 411-415 Hillsboro St., Raleigh, N. C., distributor of electronic products, to promote sales in its new, modern store.

The company has just moved into its new home which has a clean and orderly appearance that tends to encourage purchases.

Eight self-service islands have shelves built on the sides in order to furnish the greatest possible amount of display and storage space. Al Rothstein, partner and general manager, believes that there is too much wasted space on an ordinary table, with only the top available for merchandising.

The islands are built low enough,

(*Continued on page 71*)

(Left) Counters of Southeastern Radio Supply Co. are uncluttered by signs and displays, providing ample space for customer convenience and emphasizing the clean and orderly appearance of the store. (Right) Each section is labeled by signs in large modern type to facilitate customer buying, and good lighting is used as still another sales promoter. Inverted lighting in the wall shelving totals 640 watts, in addition to the 17 four-tube ceiling fixtures. The picture at the top of the page shows the eight self-service islands that proved most effective.

Stockholder Ownership May End Oklahoma Power Men Hear

PUBLIC UTILITIES under stockholder and consumer ownership as known today, may be entirely replaced by government-owned and operated projects within a few years unless the industry does something to stop present tendencies toward federal competition, members of the Oklahoma Utilities Association, meeting March 11 and 12 at Oklahoma City, Okla., were told by several speakers.

If proposed legislation in Congress requesting a federal appropriaiton of $23,000,000 to extend facilities of the Southwestern Power Administration is adopted, it ultimately will involve appropriations of $202,000,000 of taxpayers money to create a domain three times as large as TVA and four times the size of Bonneville Dam to put the federal government in direct competition with privately-owned electric utilties, George A. Davis, president of the Oklahoma Gas and Electric Co., Oklahoma City, declared.

Federal Ownership Deplored

"If this program is enacted, our electrical industry has reached its peak and within 25 years there will not be an electric company operating in the vast territory from Kansas City to New Orleans or from Western Texas to the Mississippi river," Mr. Davis warned. He urged utility people present to do something about it and prevent the legislation or the taxpayers, consumers, and employees of electric utilities will suffer great loss.

The electric utilities which have offered to purchase the total output of federal hydro-electric projects in the Southwest are sincere in their desire to pass this power on to their consumers at lowest possible rates, the speaker declared. This would prevent the weakening of the entire tax structure of the Southwest which would result from government ownership and distribution of electricity.

"If the co-operatives can serve the farmer and do it with the current we furnish them at rates he can afford to pay, we would rather they would continue to serve them," Mr. Davis said.

A promising field for the utilities in serving new industries in the Southwest such as will not disturb the present social status of the region, was pointed out by D. A. Hulcy, president, Lone Star Gas Co., Dallas, Texas. He said that in the territory of his company there are not over 500 industries which could strictly be classified as such and that there is plenty of room for many more. In Texas alone, he said, $900,000,000 of products are shipped out annually to be manufactured outside. There are great opportunities, he declared, for gas and electric companies to serve small fabricating and processing plants which could be brought into every city and town if the proper effort is exerted.

Many manufacturers in the East and North, he declared, are ready to establish branches in the Southwest nearer the sources of the materials they use, if taxes, water, and fuel supplies and other conditions are favorable to their coming.

"For the first time in a number of years, Congress is in the midst of an activity that brings cheers from all business men; it is reducing taxes," said Joseph F. Leopold, National Tax Equality Association, Dallas, Texas. "Of course the cheers would be louder if the reductions were bigger."

Reductions could be greater if the "tax subsidies which are now legally, but unfairly, given to certain kinds of competing enterprises are abolished —as they most certainly should be. Tax freedom granted to government-owned corporations, cooperatives, mutuals and other direct competitors of taxpaying enterprise, have created a two-fold national problem," the speaker continued. "First, treasury receipts to pay for the war are being depleted at a rate that forecasts the eventual destruction of the Federal business tax base. Two, private enterprise, paying war taxes now and faced with rates which even after some reduction will continue to be high to meet a national budget of probably 25 to 30 billions a year, is being liquidated and absorbed at a constantly increasing rate by tax-free competitors, with the grave possibility that the American system of free enterprise will be destroyed."

The speaker declared that the federal government spent more last year than it did in all its existence from 1776 to 1915. Borrowing among government authorities, agencies, and corporations has increased the total funds allocated by Congressional grants by over 24 billion dollars.

In a speech before the annual banquet of the association, Clayton Rand, editor of the Dixie Guide, Gulfport, Miss., declared that "We are witnessing the disintegration of the New Deal." He warned that private enterprise in the United States, "is being destroyed and a bureaucracy has been set up which is circumventing the federal constitution in most subtle ways."

Although he said there is not a single word in the constitution about interstate commerce, rules and regulations of bureaus and departments have seriously interferred with rights of the states and private business in the name of regulation of interstate commerce. Men who have made a failure in a particular line of business have been placed in charge of agencies attempting to show the people in that business where they are wrong and how to conduct their enterprises more successfully, the speaker charged. "Nations are not conquered—they rot from internal ills and from lack of sufficient interest by citizens in their government," he said.

Veteran Rights Discussed

Milt Phillips, state director, Veterans Services, Oklahoma City, admitted that veteran training under the GI Bill of Rights is only about 50 per cent effective in Oklahoma. Cases of failure often are due to the desire of returned veterans to receive the additional compensation and willingness of his employer to be relieved of paying him a higher wage, without due regard to whether the veteran is receiving proper training. He urged public utility executives, who have not done so, to set up training courses for veterans and prepare them for a real future in the industry. He said that the utilities offer exceptional opportunities for training veterans in skills which will remove them from the ranks of floaters.

An enlightening talk on Oklahoma taxation and spending was made to the utility people on the closing day by Oklahoma State Senator J. C. Nance, of Purcell, Okla. He was chairman of the Senate Revenue and Taxation Committee of the 1945-46 Oklahoma legislative session. Working with the House revenue and taxation committee, Senator Nance and his fellow committee members brought to the floor some measures which

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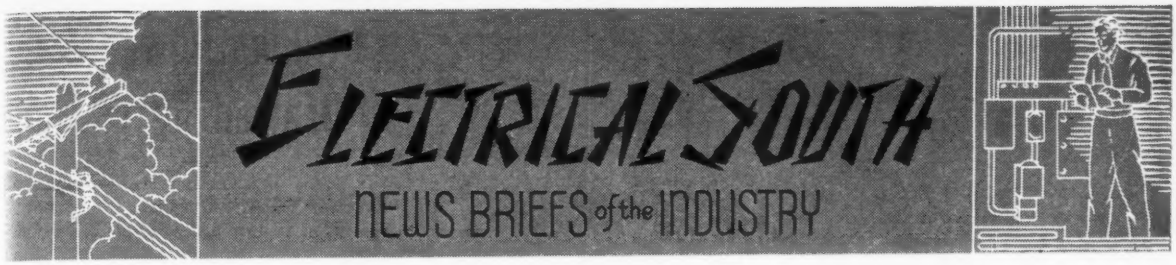


Negotiated Bids Banned Says REA Headquarters

As a result of numerous complaints from electrical contractors and others in the electrical industry, the Rural Electrification Administration has announced a new policy on contract procedures for the construction of rural lines.

Under this new procedure, there will be no more negotiated bids, but, instead, contractors will enter bids on a fair and equitable basis, secure in the knowledge that the competent, qualified contractor with the low bid will get the work if his prices are reasonable, reports the REA.

The following procedure has been outlined for awarding contractors:

A minimum of three bids must be received at the time of bid opening or else all bids will be returned to the bidders, unopened.

In the event that the low bid is reasonable and the bidder meets both the requirements for which the allocation was made and the provisions of the construction contract, the contract will be approved.

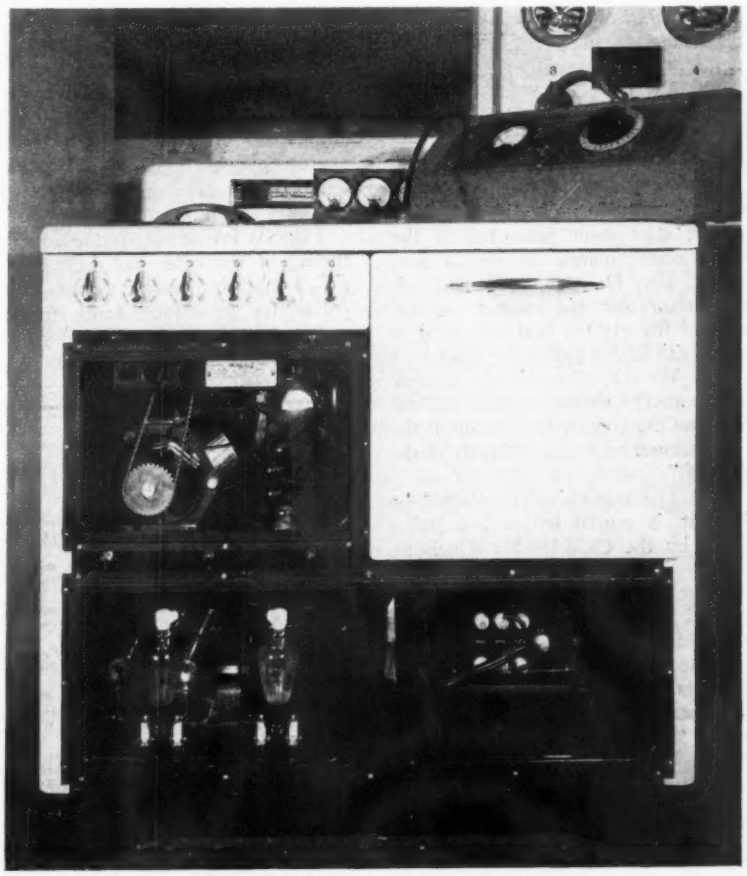
If, however, for any reason, price or other consideration, all bids must be rejected, the borrower will advertise for new bids.

Should no acceptable bid be submitted in response to the second advertisement, the borrower will abandon the plan of proceeding with construction by contract, until such time as more favorable prices are likely to be obtained. With the consent of the Administrator, however, the borrower may proceed with the construction by force account.

There shall be no negotiations carried on with individual bidders to change their bids after the bid opening or after the rejection of all bids. REA will not consider approving any negotiated contracts.

Until further notice, additional construction on the same system will be approved in the form of an amendment to an existing contract provided there is no change in prices or other provisions. Thus, as allotments for new extensions are made to the borrowers, competent contractors on these jobs are assured of continued employment on a system so long as construction funds are available.

Engineers and contractors, however, are cautioned against proceeding with any work on a construction contract or construction contract amendment until it has been approved by the Administrator.



RADAR TUBES ADAPTED TO DOMESTIC RANGE—This first electronic range was made in Chicago laboratories of Edison General Electric (Hotpoint) Appliance Co. Same company made the first electric range sold commercially 35 years ago. The involved electric equipment, including transformers and radar tubes makes the machine impractical for home use, Hotpoint engineers said. The instrument setting on top is a portable frequency meter used in testing the range. The company reported that such a range would have to retail at more than $1,000 in comparison with $116.95 for comparable conventional type electric ranges.

Reports from contractors indicate that they approve this announced procedure of awarding contracts. It clarifies the business of selecting the contractor and eliminates some of the uncertainties which have hitherto existed.

The borrowers, on the other hand, have a clean-cut, low-bid policy on which to base their decisions. In view of the widening gap in costs which has existed, in recent months, between construction by contract and construction by force account, there has been some feeling on the part of many borrowers that more attention should be paid to force account construction. This new policy, it is hoped, will result in a price structure which will permit the full employment of contractors and make headway on the large construction program ahead.

REA has not modified its established policy of refusing to approve the award of a contract if facts indicate that the bidder has an interest conflicting with that of the borrower. The REA policy with respect to contractors doing business with private power companies remains unchanged.

Southwest Power Project Subject of Controversy

AN OFFER of 11 utility companies to buy the entire output of several federal hydroelectric projects in the Southwest, recently became the center of a new controversy between the Southwest Power Administration and the private power companies.

George A. Davis, president of the Oklahoma Gas & Electric Co., asserted the offer of the 11 companies to buy the power generated at the hydroelectric plants "is not a new thing," after Douglas G. Wright, administrator for the power agency, charged the utilities had not acted in good faith and rejected the offer.

Mr. Wright informed the companies in a letter that it seemed "obvious that you are seeking to control all the power resources under authority of the SWPA."

The 11-company offer, rejected by Wright, is similar to previous offers made by the OG&E, Mr. Davis asserted.

"The Oklahoma Gas & Electric Co. offered to buy the power produced at the Grand river dam and the Denison dam at about the time each of these projects was started, and has continually stated that the savings resulting from the purchase of such power would be immediately passed on to its customers," Mr. Davis said.

Under the offer by the companies, Mr. Davis continued, the "needless expenditure of public money" would be unnecessary and the duplication of transmission facilities would be avoided.

"But Mr. Wright proposes to spend $202 millions of the public's money in marketing the hydroelectric power which the utilities offered to buy at the price established by the army engineers, the OG&E president said.

Mr. Davis said he thought Wright's statement that the offer is not in good faith "is countered by the OG&E's 44 years of business in the state."

Mr. Wright's letter was in reply to the utilities' suggestion that the large expense of constructing new transmission systems could be avoided by selling the power output to private concerns which already have facilities.

The SWPA administrator said the timing of the offer, on the date he was to appear before a congressional committee to request funds for the distribution system, indicated it was made for psychological effect.

DATES AHEAD

National

National Electrical Wholesalers Association, Annual Convention, Stevens Hotel, Chicago, Ill. April 21-25, 1946.

International Lighting Exposition and Conference, Stevens Hotel, Chicago, Ill. April 25-30, 1946.

Edison Electric Institute, Annual Convention, Waldorf-Astoria Hotel, New York, New York. June 3-5, 1946.

American Institute of Electrical Engineers, Summer Convention, Detroit, Mich. June 24-28, 1946.

National Electrical Manufacturers Association, Annual Meeting, Marlboro-Blenheim and Claridge Hotels, Atlantic City, N. J. Week of October 28, 1946.

All-Industry Refrigeration and Air Conditioning Exposition, Cleveland Auditorium, Cleveland, Ohio. October 29-November 1, 1946.

Southern

American Institute of Electrical Engineers, Southwest District Meeting, San Antonio, Texas. April 16-18, 1946.

Southeastern Electric Exchange, Annual Conference, Edgewater Gulf Hotel, Edgewater Park, Miss. April 24-26, 1946.

American Institute of Electrical Engineers, Southern District Meeting, Asheville, N. C. May 14-16, 1946.

Southern Section, International Association of Electrical Inspectors, Annual Meeting, Asheville, N. C. October 14-16, 1946.

National Electrical Contractors Association, Annual Meeting, Edgewater Gulf Hotel, Edgewater Park, Miss. October 29-November 1, 1946.

Striking Power Men Drafted by Virginia

GOV. WILLIAM TUCK, of Virginia, acting to prevent a power blackout in Virginia, announced that 3,500 employes of the strike-threatened Virginia Electric Power Co. had been drafted into the militia of the commonwealth.

In an order sent to all employes of the company, Governor Tuck said:

"You are hereby notified that you have been drafted by the governor into the service of the commonwealth to execute the law which requires that you provide electric service to the people of Virginia.

"You are therefore ordered and commanded to report to the commanding officer, Virginia State Guard, at the Virginia Electric Power Co., office located at (blank to be filled in by officer executing order) within 24 hours after receipt of this notice and thereafter be and remain obedient to the command of said officer or such other officer as may be set over you."

The order, Governor Tuuck said, put all male employes of the company under command of the State Guard, which was mobilized to execute the order.

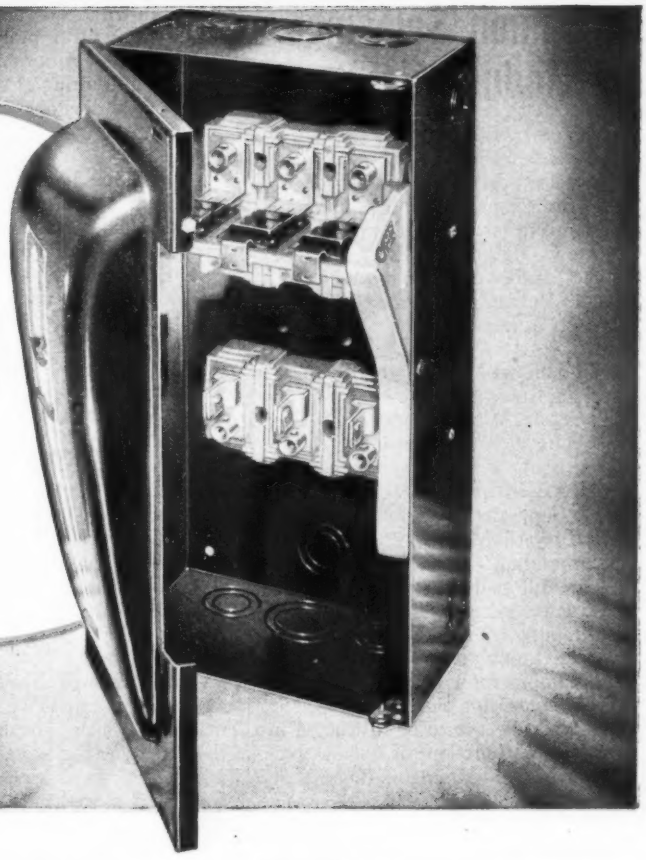
The American Federation of Labor challenged the right of Gov. Tuck to induct the 3500 AFL electrical workers into the state militia to halt a strike against the Virginia Electric & Power Co. AFL President William Green, following a conference with President Truman, said Gov. Tuck's action involved "the principle of involuntary servitude by compelling workers to work against their will."

Chicago Exposition To Be Postponed

DUE TO THE uncertainty of products and delivery schedules of vast numbers of the nation's leading manufacturers the Products of Tomorrow Exposition scheduled to open at the Chicago Coliseum April 27th has been indefinitely postponed. This was announced recently by Marcus W. Hinson, general manager of the exposition.

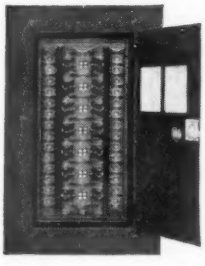
The national production outlook seems so clouded, Mr. Hinson said, that the majority of the manufacturers who originally planned to display their postwar products now consider it inadvisable to participate.

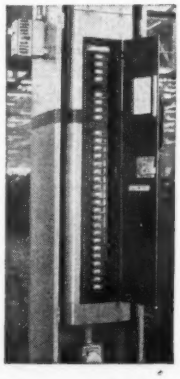
First in Quality and Safety



BULLDOG *SUPERBA* AND *CIRCUIT MASTER* PANELBOARDS

Superba Lighting Panelboards comprised of symmetrically designed bakelite units incorporate more improved operating and safety features, greater flexibility for all wiring systems and finer appearance than is procurable in any other Panelboard. Available in panel sizes ranging from 4 to 40 circuits.





Narrow Column Type Circuit Master (circuit breaker) Panels 8½" wide or less for installing between the flanges of H columns . . . saves usable working space. Special design features simplify installation problems, cut wiring time and reduce wire and conduit runs. Available in panel sizes from 6 to 32 circuits.

BULLDOG *Vacu-Break* SAFETY SWITCHES WITH "CLAMPMATIC" CONTACTS

As industry reconverts to competitive peacetime production, manufacturers—large and small—are insisting on the best circuit protective devices available *to keep power on the job.*

That's why the demand for BullDog Vacu-Break Safety Switches with "Clampmatic" Contacts has now reached a new all time high.

First in the field — in quality and safety — the many advanced and exclusive features of these BullDog switches will help you speed production and reduce maintenance costs by carrying your loads more safely and efficiently.

BETTER FOUR WAYS

1. Formed "Bakelite Arcing Chambers" confine and suffocate arcs . . . prevent burning and pitting of Contacts.
2. "Clampmatic" feature assures contacts tight as a bolted connection . . . reduces heating under continuous loads.
3. Quick action mechanism assures positive "ON" and "OFF" operation.
4. Attractive, modern cabinets with ample wiring room—yet compact. Equipped with Solderless Wire Grips.

BULLDOG

Detroit 32, Michigan. In Canada: BullDog Electric Products of Canada, Ltd., Toronto. Field Offices in All Principal Cities.

Also Manufacturers of Circuit Master Breakers — SafToFuse Panelboards—BUStribution Duct, for "plug-in" power—Universal Trol-E-Duct, for flexible lighting—Industrial Trol-E-Duct, for moving "loads."

BULLDOG ELECTRIC PRODUCTS CO.

¼-Million Salesmen Is Industry's Need

Approximately 250,000 new salesmen will be needed in the retail field of the electrical appliance division of the electrical industry when full production is in force, it was estimated by Robert C. Hill, of New York, director of the appliance division of the National Electrical Wholesalers Association, on a recent visit to Charlotte, N. C.

Mr. Hill spoke to a group of electrical appliance distributors at a meeting at Hotel Wm. R. Barringer. The distributors were from Charlotte, Greensboro, and Salisbury, and the meeting was sponsored by the Mill Power Supply company, of Charlotte, with Brevard Merritt, its sales manager, presiding.

Mr. Hill said that virtually all of these new salesmen will need schooling and training, and plans were advanced for establishing a course of instruction and training for new men and a refresher course for old salesmen. The salesmen will have to be instructed in the uses and functions of the new products which are coming on the market, Mr. Hill explained.

The meeting revolved around the problems within the electrical industry, particularly as they affect the appliance distributors. The solving of the different OPA problems in relation to price absorption, the proper screening and hiring of new employes, and the upgrading of present employes through the use of aptitude tests were discussed.

Mr. Hill predicted that maximum production will not be reached until the early fall and that not until that time will laundry equipment, electric washing machines, electric irons, and similar household necessities be plentiful.

Texas Store Offers Many New Services

A new $9,000,000 department store with such service features as a parking garage to which customers will return to find their packages already stored in their cars, is being constructed by Foley Brothers, of Houston, Texas.

Customers will drive into the service building on Travis, between Lamar and Dallas, go shopping across the street in the store occupying an entire block from Main to Travis and from Lamar to Dallas (six stories in extent), do their purchasing and return to the parking garage to find their parcels ready for checking out and placed in the automobile.

This unusual service, according to the designers of the conveyor system, will be invisible to the public and noiseless. It will extend to every shoping area of the store and be connected with the delivery section across Travis by a tunnel.

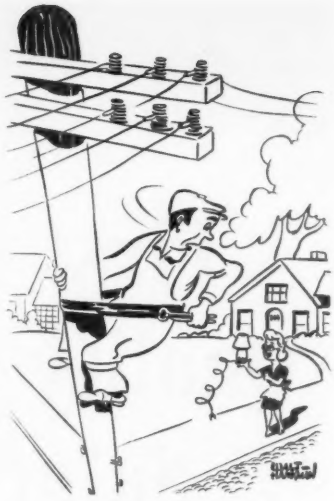
The store itself will be unusual. Windowless except for massive plate glass show windows, the first floor interior of the store will be revealed to pedestrians on the four sides by the glass areas. At the front will be huge curved windows, flanked by large glass doors, recessed from Main Street.

A striking marquee will shelter the four solid blocks of display windows, punctuated by entrances on all four streets. There will also be a street entrance off Lamar to the store basement.

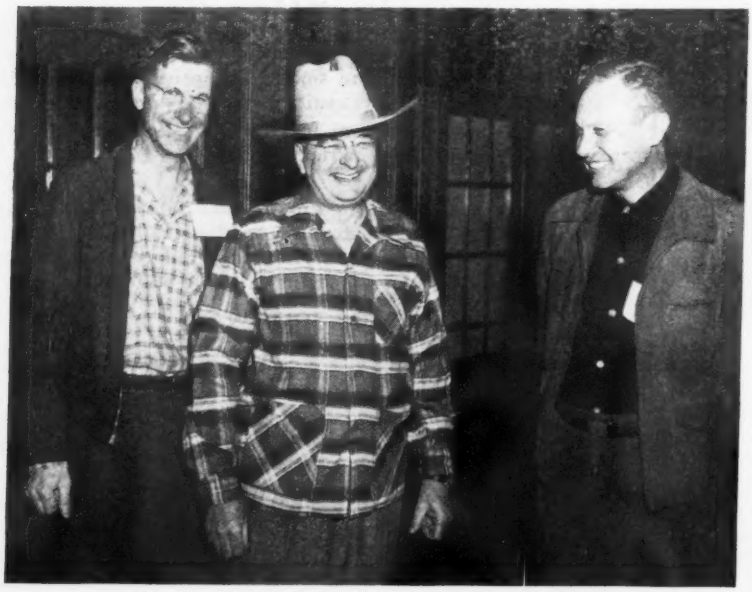
During the summer months, fresh air, cooled and cleaned by the use of electronic filters, will assure patrons shopping comfort. In the event of power failure at any time, volumes of fresh air will pour into the building through intake grills in the building walls on three sides. Exhaust fans will be provided in penthouses on the roof.

Heating pipes, suspended from the ceiling, will assure even temperatures throughout the building as the necessity arises. An ultra-modern type of radiant heating will be utilized. Both the heating and air-conditioning plants will be situated in the five-story garage and service building.

Each of the floors will be illuminated by a combination of fluorescent and incandescent lights.



"When you get through up there —will you see what's wrong with my lamp?"



TEN-GALLON HAT FOR IES PRESIDENT—H. R. Heitzman, regional vice-president, at right, and P. M. Rutherford, Jr., at left, have just equipped President A. F. Wakefield with a "Ten Gallon" hat and "Warm" shirt to help him enjoy President's Night and the big square dance held recently by the Southwestern Section of the Illuminating Engineering Society, in Dallas, Texas.

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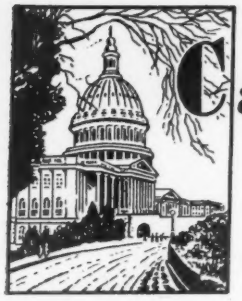

Capitol Comment

An informal discussion of matters of timely interest among key men in the government as observed by the Business Press News Bureau.

A COAL STRIKE would be much more disruptive of the economy than would a work stoppage in steel. Steel is an essential material in a wide range of activities but coal is almost in the class of electricity and water supply.

The possibility of a coal strike is not taken seriously in all quarters because it is recognized that politics is playing an important part in that threat. John L. Lewis possesses to an unusual degree the rather rare quality of leadership.

Every general who conducted a tough campaign in the war tells the same story. Leadership is a quality possessed by relatively few men but John L. Lewis has it. Nearly everyone will admit that the great majority of the coal miners will follow Mr. Lewis. If he really wants the men to stop mining coal they will stop. There is not much doubt about that. There is a feeling, however, that Mr. Lewis realizes that he can secure by negotiation ample concessions to satisfy his men. Politics, however, always has attracted Mr. Lewis strangely. No flame ever appealed more to a moth than does politics to Mr. Lewis. That weakness has all but wrecked him at times but he comes back for more. He now is supposed to be gunning for the administration. Any maneuvering he can do that will tend to disparage its labor program or bring about the loss of labor support is expected.

Even with a coal strike threat in the offing and with all the danger of little strikes growing out of the new formula there are forces operating to discourage strikes. Chief among them is labor's fear of legislation. Management, in turn, is restrained by the fear of competition.

Responsibility Demanded

Various candidates for seats in the House of Representatives this year will make use of the slogan, "No power without responsibility." Since the public has been greatly inconvenienced, and in many cases made to suffer, by strikes, a candidate favoring some judicial procedure for the settling of labor disputes is likely to be swept into office. To hedge against that possibility explains why many House members voted for the Case bill.

Since only one-third of the Senate comes up for re-election this year, the majority of that body is not as responsive to public opinion as is the House. Consequently labor legislation moves more slowly in that body. It is handicapped further by the fact that several Senators, in strategic positions, are in full sympathy with the highly organized labor groups. Under Senate rules and Senate precedents it takes a very high head of public pressure to override a determined minority. Even the group in the Senate, which is dominated by the Political Action Committee, is capable of reading handwriting on the wall. No one knows this better than do the labor leaders, many of whom would be more tractable if they did not have to compete with contenders for their jobs. Aspirants for labor union jobs make wild promises. This inability of labor leaders to follow their best judgment because of political pressure from ambitious members of their own unions, is likely to result in unreasonable demands or to prolong strikes to the point where restrictive legislation becomes probable.

"But Dear! How was I to know there was going to be a lamp sale the same week we were married!"

The No. 2 Story

Housing continues as the No. 2 story in Washington. As this column is written the legislative situation has not clarified. One thing, however, is certain. There will be a large outpouring of public funds for the purpose. The task is so great that the real problem is to get the federal government's part of the work organized so it will be most effective. While there is doubt now as to the outcome of pending legislation, it is certain that Congress will not agree to abandon controls and leave the housing situation open to the free play of economic forces.

One of the hopes being expressed in connection with the housing situation is that unnecessary costs be eliminated once and for all. Housing in the past has had to carry all the extra costs of labor union feather bedding and of work stoppages due to jurisdictional disputes. Labor, however, was not responsible for all the unnecessary expenditures. In many instances there were unconscionable costs in connection with the financing and in the speculative character of most housing developments.

The Tax Situation

To provide for the day when unemployment will be a problem there is strong sentiment in Congress to reduce the income tax on corporations. The leaders will make an attempt to prevent any reduction in the total amount of tax collected but they do regard with favor the transfer of levies from corporations to individual incomes. They believe that would stimulate industrial activity.

Congress, however, has a great aversion for dealing with taxes in an election year so there is little hope that anything will be done this year.

The interim tax bill adopted last year was looked upon as a hypodermic to stimulate reconversion. There were fine promises then of proceeding at once to revise the revenue laws in a thorough-going way. The present statutes are full of contradictions. Amendments have been added here and there until the need for revision has become acute but Congress is afraid to sit down and do the thing right at this time. The committee experts, however, have been busy making a thorough-going revision of the existing laws with the result that the committees can get off to a good start

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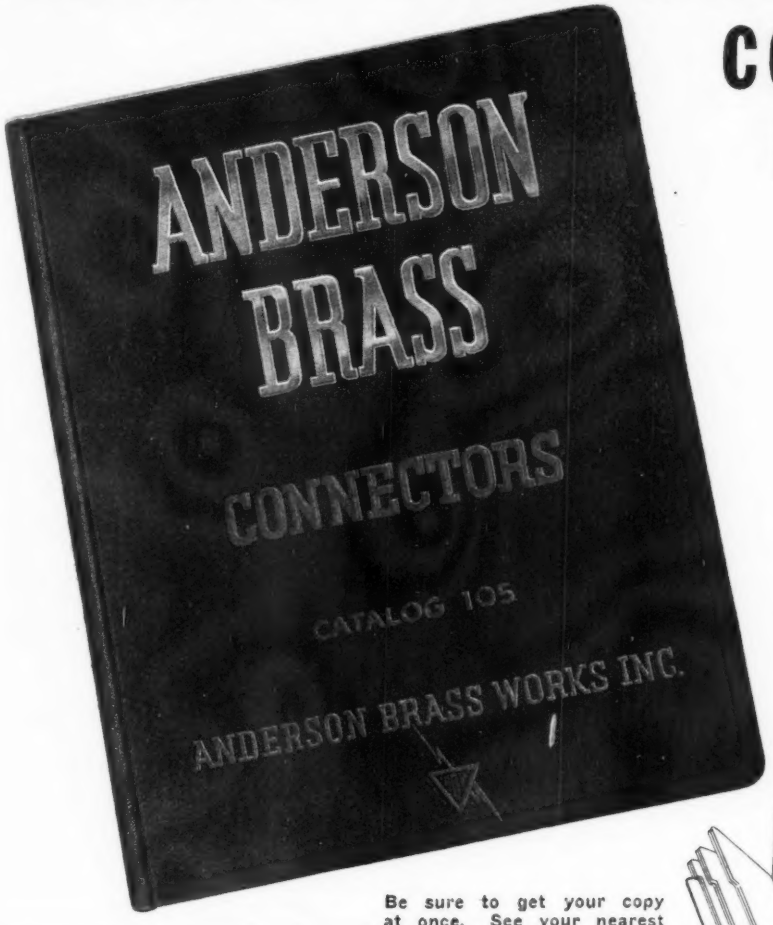

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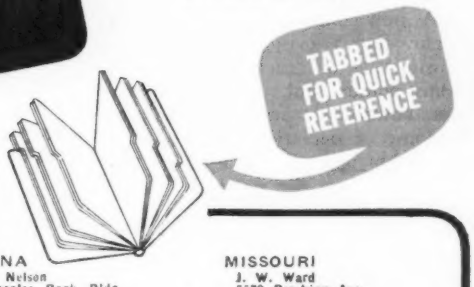

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when they take up tax revision after the election. Curiously enough, there is sentiment in Congress for another try at the undistributed profits tax.

With the municipality of Toledo entering the income tax field the chances are increased for initiative on the part of the federal government to try to bring about an understanding with the several states with regard to duplication in taxation.

The proposal which seems to be regarded with most favor is an agreement whereby the federal government would turn over a percentage of certain taxes to the states so that there would not be duplicate levies. One of the most far-reaching features of the study made by the committee of experts deals with depreciation. There is strong demand for regulations which would permit the deduction of depreciation in shorter periods than now prevail in an effort to help new enterprises.

Television: South to Share

(Continued from page 16)

and FM broadcasts to a specially designed high-altitude plane circling slowly overhead. The plane would be equipped with receivers and transmitters for re-broadcasting these programs back to the earth.

"As now conceived, the plan would employ four television and five FM transmitters on each plane," Mr. Evans pointed out. "This combination, however, is predicated only on economy of operation and could be changed at will without altering technical aspects of the system."

A coast-to-coast network for relaying television and FM programs from plane to plane between New York and Hollywood would simply require stationing eight such stratosphere planes above strategic areas spanning the continent. "To provide comparable service by ground installation," Mr. Evans estimated, "would require approximately 100 costly relay towers and hundreds of transmitters; or a coast-to-coast coaxial cable network which is estimated to cost at least $100,000,000."

The eight planes in the Stratovision relay system would fly over New York, Pittsburgh, Chicago, Kansas City, Curtis, Neb., Leadville, Col., Salt Lake City and Los Angeles, linking logical talent centers in New York and Hollywood. By adding six more planes over Durham, N. C., Atlanta, Memphis, Dallas, Sacramento and Portland, Ore., it would be possible to provide Stratovision coverage for 51% of the nation's area and 78% of its population.

"But cutting costs," Mr. Evans said, "the Stratovision system places television and FM transmission on a sound and economically justifiable business footing for the first time. It precludes the tedious city-to-small-town growth necessarily envisioned by all earlier plans, and it promises to make both services available to isolated rural homes which could not expect them for years, if ever, by any other system.

"It holds promise, too, of a mighty bulwark of post-war employment as expanded television and FM coverage creates the need for receivers with which to enjoy these new services. Its influences on everyday living may well become as far-reaching as those of radio broadcasting itself, which was introduced by Westinghouse at KDKA just 25 years ago."

"Early experiments show that the system is completely workable in any of the several television and FM frequency allocations which were recently announced by the FCC. Operation improves, however, in the high frequencies and this means that the system will hasten the day of practical color television."

Discussing details of the system, Mr. Nobles, its young creator, explained: "Programs would be originated in conventional ground studios connected with plane transmitters by a special beamed-type ultra-shortwave radio link, much like those used in radar. Similarly beamed panel-to-plane connections would be employed to form the nationwide high-altitude relay network.

"The advantage in mounting several transmitters in the same plane is to provide greater choice of programs and for economy of operation, since each transmitter would function as a separate station.

More Efficient System

"Contributing to economy of the system is the fact that as the height of a television or FM antenna is increased, the amount of power required to deliver a usable signal throughout its line-of-sight area is sharply reduced. One kilowatt of power will be sufficient to provide a useful signal throughout the 422-mile range of an antenna located 30,000 feet in the air. Thus, power to operate all nine transmitters and all monitoring and relaying equipment can be provided by each plane's engines."

"The system would bring television and FM to millions of new viewers and listeners," Mr. Nobles continued, "but, in addition, it would greatly improve these services for audiences—old and new.

"For example, best reception requires that the antenna of each receiver have directional characteristics and be pointed directly toward the transmitter antenna. This means that, for best results, the antenna for each ground receiver must be movable, and each receiver equipped with a mechanical device for bringing its antenna to bear exactly on the transmitter of each new station from which a program is desired.

"Stratovision eliminates this need since one fixed antenna installation at the receiver can be beamed so as to cover the entire small-circle course of one plane flying at 30,000 feet, keeping it constantly in 'view'. Such an installation will insure access at all times to all programs of every station operating a transmitter in that plane."

Another distinct improvement in service will result from Stratovision's high-altitude operation and the fact that its antennas will be in constant motion.

"This is in the matter of 'ghosting'," Mr. Nobles explained, "which is the annoying out-of-register viewing which occurs when receivers pick up programs by two different waves—one arriving by the most direct path between the transmitter and the receiver, the other by a reflected path.

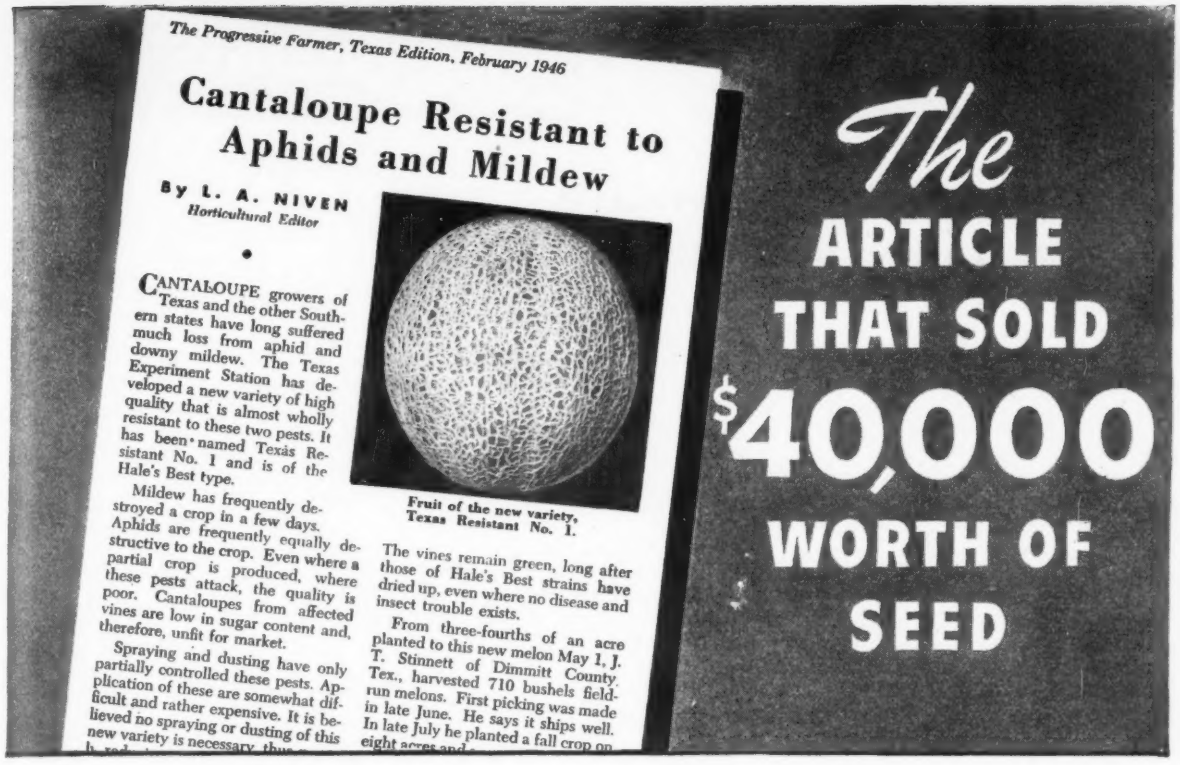
"Stratovision reduces the possibility of such reflection because its high-altitude operation will enable receiver owners to point antennas into the air—above mountains and other ordinary sources of ground reflection.

"In addition, movement of the plane will make any reflection which might occur of only very brief duration—so brief, perhaps, as to be undetected by the eye."

Still another advantage of the plan—one of special interest to engineers concerned with television and FM relay systems—is the fact that Stratovision will drastically reduce distortion resulting from repeated amplification, Mr. Nobles pointed out.

"Each repeater station adds its quota of distortion to a television or FM program," he explained, "and any ground system, because of its many repeaters, would, of necessity, build up a great amount of accumulated distorton. On the other hand, Stratovision, operating with a total of 14 planes but requiring only eight relay points to serve 78% of the population, would all but eliminate this problem."

Mr. Nobles concluded that the "real key to Stratovision operation is its ability to take an antenna high into the sky—thanks to the development of a special plane by the Martin Company".


The Progressive Farmer, Texas Edition, February 1946
Cantaloupe Resistant to Aphids and Mildew
By L. A. NIVEN
Horticultural Editor
CANTALOUPE growers of Texas and the other Southern states have long suffered much loss from aphid and downy mildew. The Texas Experiment Station has developed a new variety of high quality that is almost wholly resistant to these two pests. It has been named Texas Resistant No. 1 and is of the Hale's Best type.
Mildew has frequently destroyed a crop in a few days. Aphids are frequently equally destructive to the crop. Even where a partial crop is produced, where these pests attack, the quality is poor. Cantaloupes from affected vines are low in sugar content and, therefore, unfit for market.
Spraying and dusting have only partially controlled these pests. Application of these are somewhat difficult and rather expensive. It is believed no spraying or dusting of this new variety is necessary, thus
Fruit of the new variety, Texas Resistant No. 1.
The vines remain green, long after those of Hale's Best strains have dried up, even where no disease and insect trouble exists.
From three-fourths of an acre planted to this new melon May 1, J. T. Stinnett of Dimmitt County, Tex., harvested 710 bushels field-run melons. First picking was made in late June. He says it ships well. In late July he planted a fall crop on eight acres and
The
ARTICLE
THAT SOLD
$40,000
WORTH OF
SEED

"If your seedsman does not have this seed, write The Progressive Farmer and we will tell you where they may be had."—This sentence ended a short article describing a new variety of cantaloupe seed developed by the Texas Experiment Station.

This article appeared in the February, 1946, issue of only one edition of The Progressive Farmer—the Texas Edition, which represents only about one-fifth of The Progressive Farmer's total South-wide circulation.

By February 10th, more than $40,000 worth of cantaloupe seed had been sold to subscribers to the Texas Edition of The Progressive Farmer, as a result of queries received in response to this one short article.

The prosperous farm families of the South will respond to your advertising in The Progressive Farmer, just as they respond to the many editorial features and services offered on the pages of their favorite magazine each month.

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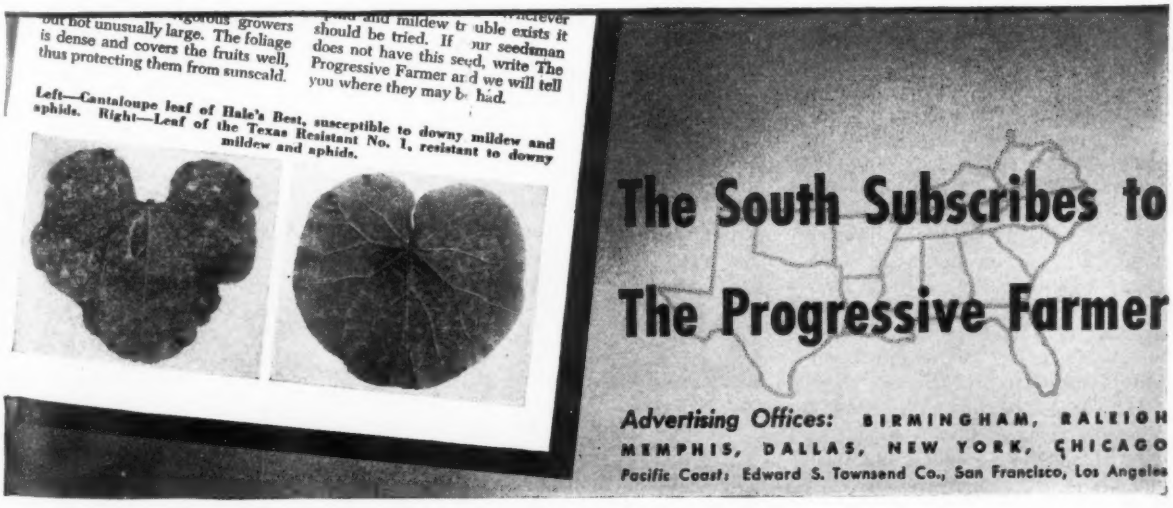
should be tried. If our seedsman does not have this seed, write The Progressive Farmer and we will tell you where they may be had.
Left—Cantaloupe leaf of Hale's Best, susceptible to downy mildew and aphids. Right—Leaf of the Texas Resistant No. 1, resistant to downy mildew and aphids.
The South Subscribes to The Progressive Farmer
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An Engineering Approach To Appliance Selling

AN ENGINEERING approach to appliance sales based on the need of the customer rather than sales on a price and service basis, is being put into use by the Woodman Engineering Company, Jefferson City, Mo., which has opened a new home appliance store.

Woodman Engineering Company has been in the commercial refrigeration and air conditioning business for about fourteen years.

By leasing an adjoining space the company has doubled its floor space and will operate a separate home appliance department under the management of John G. Toennes, sales manager.

A complete electric kitchen will be set up in an L form and so arranged that rearrangement of the units will duplicate kitchens of customers.

Complete and competent engineering service to aid customers in laying out new kitchens, laundries, and otherwise modernizing their homes is available without cost, including plans drawn in the company's own drafting department.

Unusual feature of the engineering service is that customers will not be required to buy all the units at one time.

Customers interested in remodeling or in building a new home may have the engineering department measure the kitchen space and then draw up a layout showing location of different units. The company will sell cabinets, electric sinks, electric ranges, and the whole category of electric home appliances. Utilization of odd corners in non-conventional kitchens will be popular with customers planning remodeling.

The sales department, in cooperation with the engineering department, will furnish the customer with a blueprint and working plan drawn by regular draftsmen and then will endeavor to sell the entire kitchen if the finances of the customer permit.

If for any reason the customer wants to start with one unit at a time, they will be allowed to follow the plan and add to it as they will.

Mr. Toennes said they had found that a real lack of engineering service exists for the customer and that many were inclined to remodel their homes and particularly their kitchens if competent advice and help could be obtained.

Since this service is costly, it will not be the policy of the store to furnish a scale drawing to every prospect who calls. Prospects who are in need of such plans and show that they are sincere buyers and not just price shoppers will be gladly furnished with the service.

Cooperation With Contractors

Building contractors will be made acquainted with this engineering service so that when remodeling jobs come calling for kitchen overhauling that they will have competent help in planning.

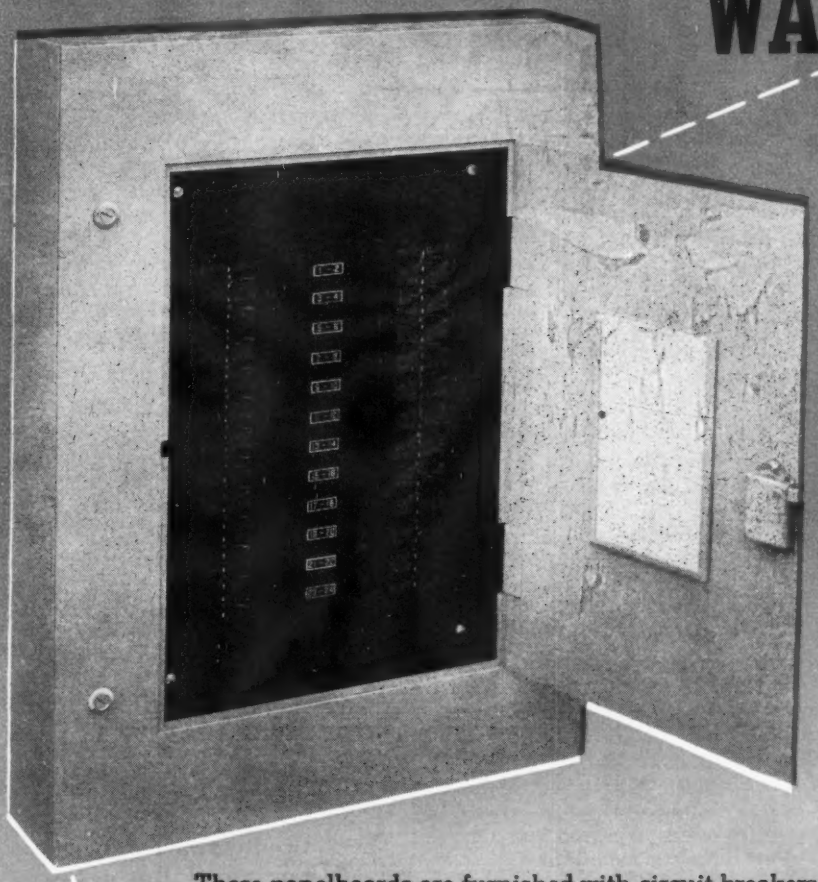
"Most people are not price shoppers," Mr. Toennes said, "when it comes to buying electrical appliances. Our entire selling program is based on the needs of the customer and our ability to competently advise him.

"For instance," he continued, "most people in the past bought electric refrigerators that were too small. When a prospect is interested in buying an electric refrigerator from us, we are going to spend enough time with the customer to find out the need for refrigeration. In order to advise properly, we will need to know the size of the family, the number of children in school, the number of meals prepared at home and for how many persons, and various other phases of the family life. We are then in a position to point out that by purchase of suitable sized refrigerators, they will be able to keep certain specified amounts of meats, vegetables, and other foods. All this will be based on the fact that much of the food dollar can be saved if the electric refrigerator is of the proper size for the job.

"In former years when hardly anyone bought anything larger than a five-foot box," Mr. Toennes contin-

John G. Toennes, sales manager of Woodman Engineering Co., Jefferson City, Mo., shows the new appliance to a prospect. Complete kitchen and laundry plans drawn to the customer's specifications will be a feature of this company's service for both new and remodeled homes.

Magnetic Breaker Type PANELBOARDS *by* WALKER



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These panelboards are furnished with circuit breakers and have a true inverse time delay trip. They can be closed immediately after opening on overload, provided current has returned to normal. They provide maximum protection to circuits where flexible conductors, such as lamp cords, are used, due to instantaneous magnetic short circuit trip, which does not require large currents and time for trip element to heat up and trip. • Walker panelboards are highly machined for perfection and are built for years of trouble free service.

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ued, "we had many customers later on to tell us that we should have sold them a larger box and even to chide us for not doing it."

According to the system of the Woodman Engineering Company, it is a part of the duty of the seller to be able to advise the purchase of the correct size for the use of the buyer.

Woodman takes the position that electrical appliances are not gadgets that can be sold at bargain basement, wrap-up and carry-away prices.

"Engineered" Sales

An electric refrigerator may be on the market for $79.50, Woodman points out, but no matter who makes it or who sells it, it can never be anything more than $79.50 worth of refrigerator at its very best. The average family might have to buy four or five of them to get adequate refrigeration.

"We try to be sure that our customers realize that they get just what they pay for," Mr. Toennes said. "We make sure that they know that we carry standard, nationally advertised merchandise with a reputation and that we stand back of every product we sell with our own service. And further that the manufacturer stands behind both our company and our customer.

"The next step is to get the customer to see that adequate use and adequate capacity of the unit they buy is far more important than buying something they don't really want because it happens to be a few dollars cheaper. It is a buy-the-best, buy-enough-capacity to get the most service from the dollar spent. By any rule that is the best economy," Mr. Toennes continued.

Besides the engineering and sales advice, the company will have fixed rules of courtesy for salesmen, a long-range plan of selling the public on the integrity and sincerity of the company and its desire to perform a definite service.

As a further aid to promoting confidence in the firm, the company has been specializing in many intricate jobs, such as air conditioning and heating. Each division is departmentalized and stands on its own feet.

While the appliance display room is connected to the other store by an archway cut in the wall, the appliance department is entirely self-sustaining. The company operates a wholesale department which sells to the other departments.

In each of the specialized departments, experts and engineers experienced in their lines are engaged for each department. This engenders public confidence in their service and their product.

Demonstration booths that are virtually soundproof but offering free vision through double-glazed windows are used in radio sale closing.

Radios will be displayed on the main floor along with electric kitchens, washing machines and other appliances, but will not be demonstrated or played on the display floor.

The reason for this is that such playing may distract another customer and interrupt a salesman and a prospect for some other appliance.

Consequently, they have built a soundproof room, with double-glass windows and doors. The radio in which the prospect is interested will be placed in that room where customer, salesman, and the radio may perform undisturbed.

Under the old system of indiscriminately turning radios on and off that are displayed on the floor, it was found that customers were sometimes lost because interruptions came at the wrong time.

Undesirable features of an ordinary demonstration room were eliminated by the use of double-glass windows and doors. Old style rooms with no view into the rest of the store gave the customer the idea of being cooped up and made some prospects ill at ease. In the Woodman booth the customer will have a view of the rest of the store but just won't be able to hear what is going on outside anymore than those outside can hear what is going on inside the demonstration room.

The entire store is air conditioned and heated, including the demonstration rooms. This system provides for heated air in winter and cooled air in summer and is at all times a demonstrating unit for the company.

L. E. Woodman is the owner of the Woodman Engineering Company and is active in all phases of the business besides being a well known refrigeration and air conditioning engineer. John G. Toennes, sales manager, has had twenty years experience in merchandising, lighting, and appliances.

Since January 1 the sales force in the home appliance department has been increased from six persons to eighteen.

As further sales ammunition, each appliance will be studied by the entire sales force so that each man will know his merchandise.

Mr. Toennes will inaugurate a system of sales meetings at which time the assistance of manufacturers will be utilized to bring out all the facts regarding the home appliances that they sell.

Part of the value of this will be to have salesmen competent to point out all the advantages of the equipment so that buyers will be able to get full use of all the conveniences that have been built into the unit.

Mr. Toennes said that he doesn't want one customer to be able to tell him a year later that she had a gadget on her stove that she had just found out how to use.

"The more we are able to teach our customers how to use all the conveniences built into the equipment, the greater will be their confidence in our company," Mr. Toennes said. "And the greater this confidence, the more they will tell their friends."

Credit Sources Given For Small Businesses

How MANY businesses may obtain credit and capital for sound business ventures is explained in a bulletin on "Credit Sources for Small Business," issued recently by the U. S. Department of Commerce.

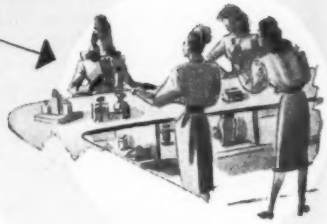
The private commercial bank is still the main source of business credit, the bulletin says, and small businesses have even more reason to turn to their banker for credit help than have large companies which have increasingly relied on internal financing and on the issuing of securities to meet their capital and credit needs.

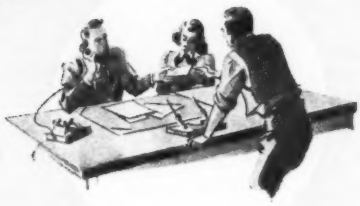
The bulletin discusses in detail the types of credit extended by such diverse institutions as banks, industrial banking companies, small loan companies, factors, sales finance companies, miscellaneous finance companies, insurance companies, equipment manufacturers, wholesalers and similar sup-

New Complete Line of

MITCHELL
COMMERCIAL LUMINAIRES

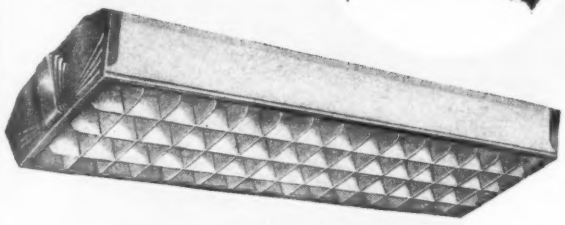
Broadens Your Lighting Service!
Strengthens Your Leadership in Your Market!





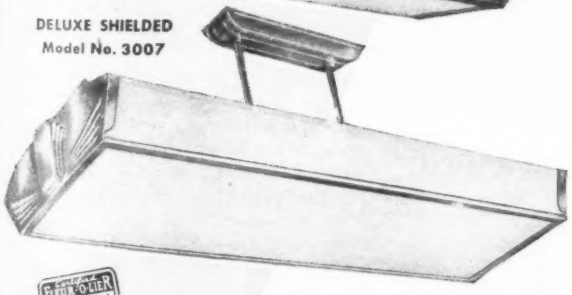
For
STORES
OFFICES
SCHOOLS
PUBLIC BUILDINGS

DELUXE LOUVERED
Model No. 3011



SHIELDED UNIT
Model No. 3004

DELUXE SHIELDED
Model No. 3007



New Designs! New Features!

Answer Every Commercial Lighting Need

You have *everything* in the new complete MITCHELL line . . . to give you the lead in your market. For MITCHELL Fluorescent Luminaires offer every aid to lighting efficiency . . . and more value per dollar. They help you render a broader, more complete lighting service. They open up new fields . . . multiply your prospects! Twelve important features include exciting new modern designs in 2-light and 4-light units . . . glass-shielded, louvered and open types . . . Instant-Start . . . new patented "One-Man Quick Mount" . . . economical maintenance. Back of it all, stands the nation-wide acceptance of MITCHELL Products. That gives you today's *strongest selling line.* That makes doubly sure for you volume sales and profits in the great new lighting market.

Get New Catalog No. 285
Illustrates and describes the complete line of Commercial Luminaires. Includes helpful lighting data and servicing information. Write for it now.

See Our Catalog in Sweet's
For convenient reference, Mitchell Commercial and Industrial units are cataloged in Sweet's 1946 Architectural and Mechanical Industries Files.

Mitchell Manufacturing Company
2525 CLYBOURN AVENUE, CHICAGO 14, ILLINOIS
West Coast Factory and Sales Office: 1019 N. Madison Ave., Los Angeles 27, Calif.

Visit the MITCHELL exhibit at the International Lighting Exposition at the Stevens Hotel, Chicago April 25-30, Booths No. 69, 70 and 71.

MITCHELL
FOR TOP LIGHTING VALUE

MAKERS OF

Commercial and Industrial Fluorescent Lighting Equipment • Store Window Lighting • Spotlights and Floodlights • Desk Lamps • Portable Floor and Table Lamps • Bed Lamps • Ultraviolet and Infrared Health Lamps • Residential Lighting Specialties.

pliers, individual investors, investment bankers, corporations seeking affiliates, branches or outlets, the Reconstruction Finance Corporation, Federal Reserve Banks, Smaller War Plants Corporation, Federal Housing Administration, and community industrial development groups.

Choosing a Bank

Many banks are now setting up special small business departments, according to the bulletin, which states that in the choice of a bank the small business man should "choose a banker who possesses character and leadership, one who is willing to assume a risk providing there is a reasonable chance of repayment; a progressive banker, one who is alert to current industrial trends, willing to make loans for new products and more efficient processes."

"Such a banker," the bulletin says, "knows that in a world of rapid change, risk is a matter of careful analysis, not merely of traditional soundness."

The community banker, who more often than not is a small businessman himself, may be more receptive to the needs of the small business man than the larger city bank, the bulletin says, but sometimes the larger banks quote more favorable rates and the only answer is to compare.

Once the small business man has chosen a banker he should consult him frequently, visiting him at his office and inviting him to return the visit, the bulletin advises, and adds:

"Show him around. Invite him to look over your books. Freely explain your plans to him, especially if they involve expenditures out of the ordinary. Do not try to conceal difficulties from him. It is part of the banker's code not to betray confidences. Mutual frankness is the first basis of good banking relations."

Business men who can qualify should be able to turn to their bank for one of the following types of loans, according to the bulletin: character loans, term loans, installment loans, loans on accounts receivable, loans secured by warehouse and field warehouse stocks and equipment loans.

The difficulty small businesses often encounter in securing adequate credit is also discussed, and the bulletin notes that "small concerns have often had to resort to the unsound practice of using renewable short-term commercial loans for working capital, for long-term seasonal capital, or even to take the place of fixed long-term capital."

In general, the bulletin says, the business man is justified in seeking a loan when he can use it to cut costs or otherwise increase efficiency by more than the cost of obtaining the additional funds, but he should not forget that "other things being equal the company that gets the credit it needs at the least expense wins."

The booklet is designed for widespread distribution among small business men and may be obtained by banks, or other financial institutions wishing to distribute it, or by individuals themselves, from the Superintendent of Documents, Washington 25, D. C., or from Department of Commerce field offices at 15 cents a copy.

How to Put Punch In Your Advertising

By David Markstein

A GOOD APPEAL in advertising touches a buying urge, one of the springs which makes dollars jump from the consumer's purse into the merchant's cash register.

What factors make one advertisement sell more merchandise than another? *What is good advertising*—and and what can the average appliance merchant do to improve his store's printed selling?

With this issue, ELECTRICAL SOUTH begins a series of articles designed to help the merchant who is not an advertising specialist to do a better job of mass newspaper, direct mail, and radio selling.

When tourists admire the Empire State building, they waste few oh's and ah's on its foundation, yet it is the solid foundation which makes that engineering wonder possible. In the same manner, it is the solid foundation of an advertisement—the selling appeal it uses—which contributes most toward making the ad a whopping success or an expensive failure. Pretty words and pictures are necessary, but they serve as window dressing to put across the ad's basic selling appeal.

What is this appeal business? And what differentiates a good appeal from a poor one?

Naturally, different motives are behind the purchase of different merchandise, and are effective on different occasions.

Psychologists recognize three main human needs which are useful in selling, and a dozen "secondary" motives. The desire for mastery—the buying urge which makes men keep up with the Joneses and women buy new dresses in order to become the best-dressed woman in the block; the need for food and drink—useful in selling many appliances; and the old, familiar sex drive that makes women buy rubber gloves and special soaps in order to avoid dish pan hands . . . these are the main motives which make humans buy. Two other important motives are the save-money urge and the desire for comfort. Probably 99% of all purchases spring from the need to satisfy one of these.

Before advertising an item of merchandise, rule number one is to find out *why people buy it*. What purpose does it serve—not merely its utilitarian value, but in satisfying one of the three main needs which make humans buy? For example: the obvious reason for buying an electric refrigerator is to keep food in eatable condition with a minimum of time and trouble expended to do it. The appeal here is to the desire for food and drink—"Meats keep longer in this Blank refrigerator"; or to comfort—"No more pan-emptying for Blank owners."

Why does the customer buy this? In normal buying times such as are coming back shortly, an advertisement for refrigerators which hits the fundamental human urge behind the purchase will out-sell by many times an ad headed simply "electric refrigerators."

Service Leads to Sales

CONCENTRATION on giving service to 5,000 customers in the Newport News area to whom they sold electric appliances before the war, has been the goal of the Johnson Electric Appliance Co., Inc., 3404 Washington Ave., Newport News, Va., and these customers are the Number One prospect list now that merchandise is again becoming available.

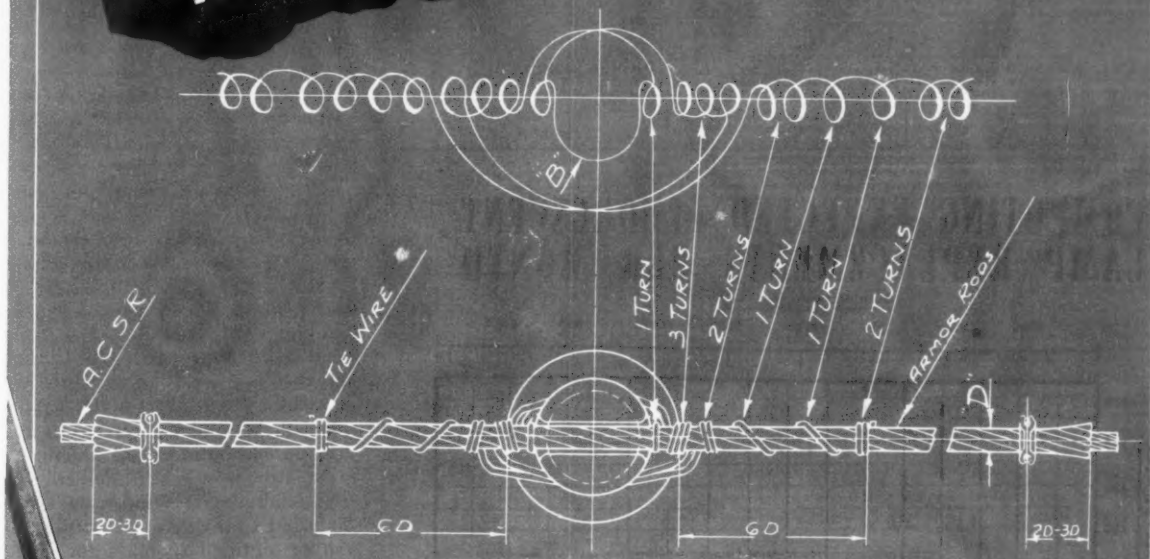
"We handle only one brand, and we tried to give all our customers the best service possible during the emergency," S. C. Johnson, president, said. "We know that these customers appreciated our efforts in keeping them going in the face of many difficulties, and we have offered them the first opportunity to buy and trade in any of their equipment worn out or obsolete."

Priority lists of customers who want certain things are kept and as the equipment comes in customers in line are notified by postal card that it will be held for three days. If not bought by the priority holder within three days, the article is offered to the next in line until sold.

"Our old customers will form a perpetual prospect file," Mr. Johnson said, "and by combing this file, we will have the advantage of dealing with people we know and who know us."

AN IMPROVED TIE, DEVELOPED by Alcoa FOR YOUR A.C.S.R. LINES

Top Groove Tie
(OVER ARMOR RODS)



NOTES:

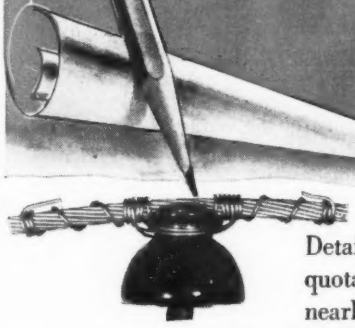
No. 6 Aluminum Tie Wire.

MAKE TIE AS SNUG AND TIGHT AS POSSIBLE BY HAND (PLIERS NOT REQUIRED) WITH THE FIRST SIX TURNS (BUTTONS) ON EACH SIDE AS CLOSE AS POSSIBLE TO THE HEAD OF THE INSULATOR.

No. 7 Strong Aluminum Alloy Tie Wire.

MAKE TIE AS SNUG AND TIGHT AS POSSIBLE BY HAND UP TO THE LAST TWO TURNS (BUTTONS) AT THE OUTER ENDS. THEN USE PLIERS TO CONTINUOUSLY CINCH THESE LAST TWO BUTTONS. USE THE FLAT FACE OF THE PLIERS AGAINST THE ARMOR RODS AND AVOID NICKING THE TIE WIRE BY USING A CONTINUOUS CINCH INSTEAD OF A BITE. No. 7 STRONG ALUMINUM ALLOY TIE WIRE WILL DEVELOP GREATER STRENGTH THAN No. 6 ALUMINUM TIE WIRE AND WILL WITHSTAND A HIGHER UNBALANCED PULL IN CASE OF UNEQUAL TENSIONS IN ADJACENT SPANS. ALSO IT WILL WITHSTAND MORE WHIPPING AND REPEATED STRAINS CAUSED BY HIGH WINDS. THE DOUBLE TIE PROPERLY MADE WITH No. 7 STRONG ALUMINUM ALLOY TIE WIRE IS RECOMMENDED IF MAXIMUM HOLDING POWER IS DESIRED.

A.C.S.R.		Armor Rods		Tie Wire		A.C.S.R.		Armor Rods		Tie Wire	
Size B&S Gage	Dia In.	Cat No.	"D" Dia Over Rods In.	Size Alum	Size Strong Alum. Alloy	Size B&S Gage	Dia In.	Cat No.	"D" Dia Over Rods In.	Size Alum	Size Strong Alum. Alloy
4/0	.563	1249	1.051		7	2	.316 .325	1126	.584 .598	6	7
3/0	.502	1245	.938		7	3	.281	1125	.521	6	7
2/0	.447	1241	.835		7	4	.265 .257	1124	.548 .532	6	7
1/0	.398	1128.1	.744	6	7	5	.223	1123	.491	6	7
1	.355	1127	.657	6	7	6	.198	1122	.434	6	7



Detailed information on ties, together with other help and quotations on Alcoa A.C.S.R. may be obtained from the nearby Alcoa office. Or write:

ALUMINUM COMPANY OF AMERICA, 2164 Gulf Building, Pittsburgh 19, Pa.

ALCOA ALUMINUM REG. U.S. PAT. OFF.

ALCOA A-C-S-R
ALUMINUM CABLE STEEL REINFORCED

HOT AND COLD CATHODE COMPARISON

By Joe B. Browder*

ELECTRICAL contractors and others in the electrical industry are hearing more and more discussion on "cold cathode," "hot cathode," and "hot and cold cathode combination" lamps. To some these terms have been confusing because they have found that the "cold" cathode lamp may be warm while in operation and the "hot" cathode lamp may get as hot one might expect!

There is no need to be misled by these terms, for the fundamental principles involved are relatively simple. A cold cathode lamp is no cooler than a hot cathode lamp in the overall production of heat per watt of current consumed. One kilowatt-hour (1000 watt-hours) is equivalent to 3413 BTU's (heat units) whether this kilowatt-hour is used to light a cold cathode lamp, light a filament lamp, run a motor, cook dinner, or heat a bathroom. The reason fluorescent is termed cool light is because it gives roughly 2½ times as much light per watt consumed than a filament lamp will give. This enables you to do the same lighting job with less wattage, and therefore less heat, or better still, it enables you to do a *better* lighting job with little or no wattage increase over the old incandescent system.

No attempt will be made here to go into detail on cost comparisons of hot and cold cathode lamps. Either one can be justified economically, and I have seen convincing figures that each one is the most economical.

The Slimline fluorescent lamps are a combination of hot and cold cathode in that they start as a cold cathode and operate as a hot cathode lamp. None of these lamps are "cure-alls." There is a place for all three and there are places where one is decidedly better than the other two. The prospective purchaser of any sizable lighting installation should get the unbiased opinion of some lighting engineer who does not sell lighting equipment. Most power companys employ such engineers and their services are usually free for the asking.

Below is a brief comparison of the merits and demerits of hot and cold cathode lamps. Slimline, technically speaking, is a hot cathode lamp, but is compared separately below because of several points of difference.

For the sake of simplified comparison, the most efficient operating circuits and lamps have been chosen from each group. For hot cathode comparison two 40-watt, 48-inch

COMPUTING EXPECTED FLUORESCENT LAMP REPLACEMENTS PER MONTH

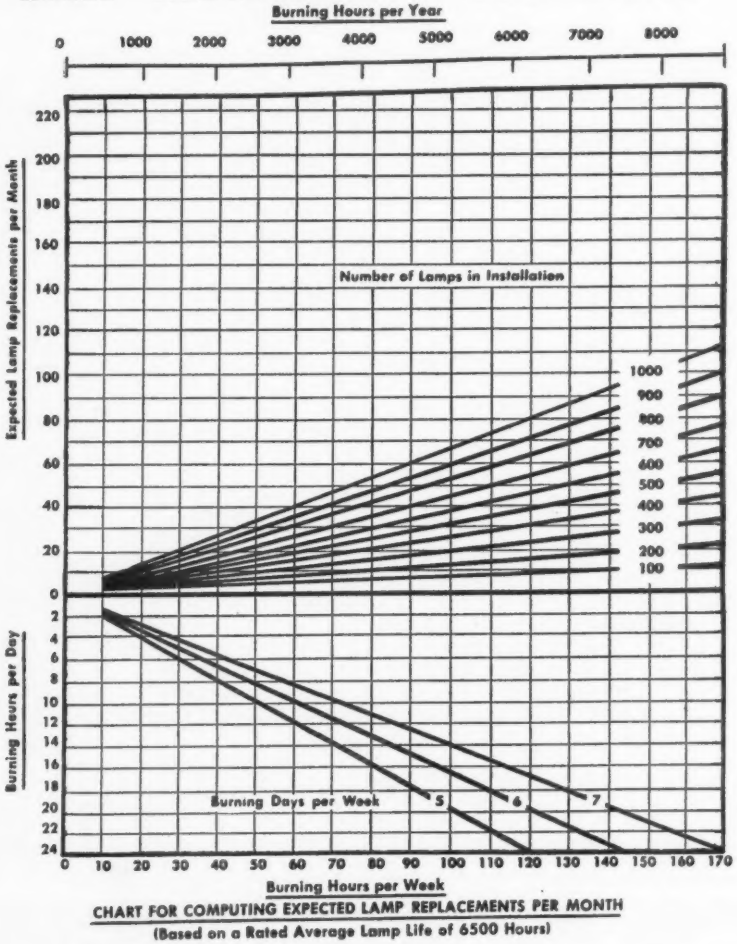


CHART FOR COMPUTING EXPECTED LAMP REPLACEMENTS PER MONTH

(Based on a Rated Average Lamp Life of 6500 Hours)

This chart can be used to determine in advance the approximate number of lamp replacements that will be required per month for any given set of operating conditions. It is based on the formula: expected lamp replacements equals number of lamps × average burning hours per month, divided by rated average life of lamps. (Courtesy of Sylvania Electric Products, Inc.)

*Mr. Browder is an industrial lighting engineer for the Georgia Power Company, Atlanta, Ga.

THE ABC OF HAZARD INSULATIONS

BUILDING WIRE

Type R — up to 5000 volts — 50 C. Excellent "code" grade building wire

HAZACODE

GENERAL USE

5000 volts — 60 C. High current carrying capacity — all coverings

PERFORMANCE

WET LOCATIONS

Type RW — 5000 volts — 50 C. Light weight—no lead—indoors or outdoors

WATERTITE

HIGH GRADE WIRING
All-Purpose

Type RH — 8000 volts — 75 C. heat resisting, super-aging — all coverings

PERFORMITE

THERMOPLASTIC
Building Wire

Types T and TW—600 volts—60 C.—sizes No. 14 — 4/0 Dry and wet locations — no braid — small diameter

HAZAKROME

UNDERGROUND

5000 volts — Non-leaded — for submarine use or direct burial

SUBMARINE

POWER TRANSMISSION
and General Use

15,000 volts — oil base compound — 70-75 C. High voltage circuits, etc.

KEYSTONE

HAZARD

insulated wires and cables for every electrical use

4428

3500° white lamps operated on a tu-lamp ballast has been used. For Slimline, two 30-watt, 96-inch 3500° white lamps operated at .1 ampere on tu-lamp ballast is used. For cold cathode, two 42-watt, 93-inch 3500° white "Colovolt" lamps operated on a tu-lamp ballast is used.

Sign tubing ("neon") using voltages up to 15,000 is *high* voltage cold cathode but is not considered here. Sign tubing is used principally for advertisement and decoration, and special "built on the job" cases where curves and odd lengths are needed. It is expensive and impractical for general lighting systems where quality and quantity of light is of any importance.

Safety Accent in Lighting

Twenty years ago street lighting was designed chiefly for civic beautification or pedestrian convenience. The volume of modern traffic places the emphasis on safety, and today's luminaries are designed with this purpose in mind.

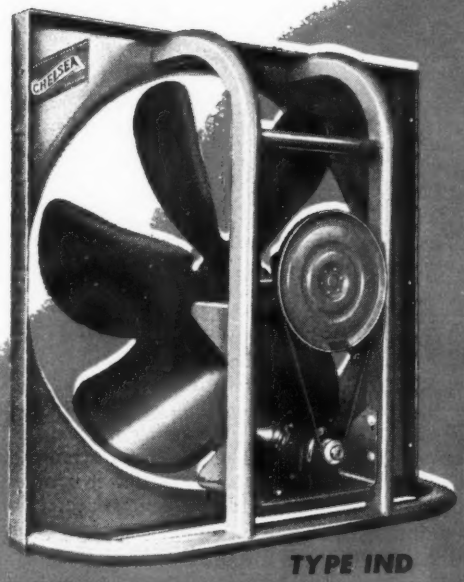
Comparison of Advantages and Disadvantages of Hot and Cold Cathode Fluorescent Lamps

Hot Cathode Fluorescent	Slimline (Hot Cathode) Fluorescent	Cold Cathode Fluorescent
Delay or instant starting*. Starter required. Less lamp footage required.	Instant starting only. No starter used. More lamp footage required.	Instant starting only. No starter used. More lamp footage required.
Light units (lumens) per foot 530.	Light units (lumens) per foot, 243.	Light units (lumens) per foot, 275.
12 watts per foot, including loss in ballast.	4.75 watts per foot, including loss in ballast.	6.8 watts per foot, including loss in ballast.
Overall efficiency in light units (lumens) per watt 43.7.	Overall efficiency in light units (lumens) per watt, 51.3.	Overall efficiency in light units (lumens) per watt, 40.3.
Lamp life shortened by frequent starts not recommended for flashing or dimming.	Lamp life shortened by frequent starts not recommended for flashing—can be used on dimmers.	Lamp life unaffected by frequent starts. Can be flashed and dimmed without damage to lamp.
Average lamp life based on 3 hours burning per start 2500 hrs. 6 " " " " 4000 " 12 " " " " 6000 "	Average lamp life based on 3 hours burning per start 2500 hrs. 6 " " " " 4000 " 12 " " " " 6000 "	Average lamp life, 10,000 hours plus (burning hours per start has no effect on lamp life.)
Operates at low lamp voltage (108 volts). (Starting voltage 500 volts on instant start ballast.))	Operates at medium voltage (335 volts). (Starting voltage, 700 volts.)	Operates at high voltage (450 volts and up). (Starting voltage, 750.) (Sign tubing up to 15000 volts.)
Low temperature seriously cuts down the light output and makes starting dificult unless special lamp is used. (Below 50° F. regular lamp may not start.)	Low temperature cuts efficiency but not so much as with hot cathode. Starting is less difficult.	Will operate at very low temperature with less loss than other lamps. Starting also easier. (Will start at 25° F.)
High humidity makes starting difficult unless special lamp is used, especially on instant start circuits.	High humidity makes starting difficult unless lamp has conductive strip on outside of tube. This will probably be standard practice.	High humidity affects starting very little.
List price of lamp, $ .95.	List price of lamp, $2.70.	List price of lamp, $3.00.
Lamp brightness expressed in Footlamberts—1750**	Lamp brightness expressed in Footlamberts—exact figure not available —approximately 1450**	Lamp brightness expressed in Footlamberts, 1540**
Available in 6, 8, 14, 15, 20, 30, 40, and 100 watt sizes from 9" to 60" long and from ⅝" to 2⅛" in diameter.	Available in 15, 22, 23, 25, 30, 38, and 52 watt sizes from 42" to 96" long and from ¾" to 1" in diameter.	Available in one size, 42 watt, 93" long and 1" (25 MM) in diameter. (Other sizes made for special application.)

***Instant starting can be accomplished with use of instant start ballasts and no starter is used in this method. There has been announced by the General Electric Company a "Jack Rabbit starter" which accomplishes instant starting when used in lieu of the regular starter in a standard fluorescent circuit. In both cases the use of instant start lamps is recommended since this type of starting shortens the life of a regular lamp. The lamps look identical and cost the same.**

****All three of the above lamps are too bright to be used bare except under certain conditions. They should be shielded from direct view in most lighting applications. The maximum brightness which good practice allows in the field of view is from 800 to 1,000 footlamberts. Excessive brightness hinders vision and causes undue eyestrain.**

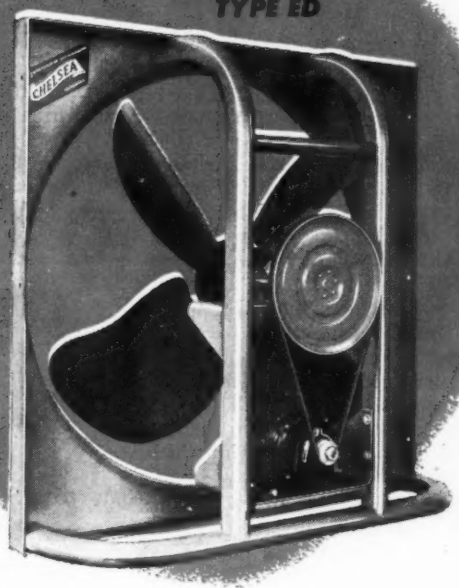
Chelsea Ventilating Coolers for Home, Office, Factory or Store!



TYPE IND

PLAN NOW to meet the demand for modern installations that will provide "tops" in liveability . . . in industrial or residential construction. Chelsea comfort coolers afford quiet, dependable performance and operate with maximum economy. All Chelsea equipment is backed by 30 years of specialization in fans and blowers for every application. Specifying Chelsea for home or industry means providing the most in ventilation.

TYPE ED

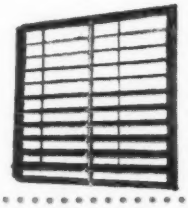


TYPE IND STREAMLINED INDUSTRIAL FAN:

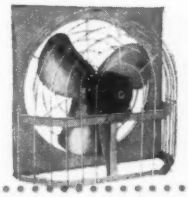
For heavy duty cooling requirements — factories, lofts, sports arenas, theatres, institutions, etc. Streamlined venturi orifice provides greater efficiency in duct work or against automatic louvers. Easily installed, low power consumption. Ball bearings on motor and shafts; six balanced, die-stamped blades. Rugged all-steel frame and orifice; certified ratings.

TYPE ED STREAMLINED ATTIC FAN: For cooling homes, churches, hotels, hospitals, schools, and attic ventilation. Streamlined construction throughout, rolled-steel venturi orifice provides greater efficiency under static pressure. Four die-cut, die-formed balanced blades of heavy steel eliminate vibration. Belt drive, totally enclosed ball-bearing motor; certified ratings. Moving parts are rubber cushioned.

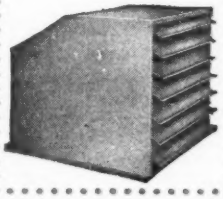
INVESTIGATE THESE WIDELY-USED CHELSEA VENTILATING UNITS



Type LWL Automatic Louvers: For general ventilation installations. Protects fan when not in use. Aluminum leaves pivoted in machined brass to reduce friction; tie rods cadmium plated bushings. Larger units dual to eliminate twisting of leaves.

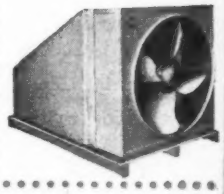


Type AA Utility Fan: For cold storage, meat packer and freezer applications. Totally enclosed ball bearing motor with both front and rear guards. Capacity: AA20 — 3000 CFM; type AA24—4800 CFM. Fan speed—1100 rpm.



Type PH Penthouse Roof Ventilator: For roof ventilation. Operates against static pressures using the IND type industrial fan housed in steel penthouse with automatic shutters. Completely assembled—ready for installation.

Type P and MC Pedestal Fans: For shops, offices, stores, and factories. Rugged construction with steel die-stamped blades. Motor and fan shaft ball bearings. All parts protected against rust. Available in a wide range of sizes.



Type EU Package Attic Fan Unit: For cooling homes, churches, hotels, hospitals, schools, etc. New streamlined venturi orifice delivers greater air volume. ASH and VE method certified ratings. Efficient, low current consumption motors.

CHELSEA PRODUCTS
INCORPORATED
1206 GROVE STREET, IRVINGTON, NEW JERSEY

Apprentice Training Plan Builds Operating Force

In order to do their share in helping to fill the increasing demand for industrial, commercial, and home structures—all of which require sundry and various electrical installations—electrical contractors, in many cases, will need to expand their present working forces. For this purpose, a ready-to-hand supply source can be found among discharged servicemen.

By participating in the GI on-the-job training plan, Southeastern Electric Company, Miami, Fla., is building up its own operating personnel. The firm, now, has 18 former servicemen undergoing apprentice training. All of them have had electrical installation experience of one kind or another. Included are men with aviation, Marine, and Army signal corps electrical backgrounds.

In some instances, these GI apprentices have had pre-service electrical training of some type. In all cases, these men feel that employment opportunities are broader in the electrical construction field than in the specialized electrical branches with which they are most familiar.

"Our purpose," explains A. F. ("Bud") Miller, Southeastern's managing partner, "is to turn our GI apprentices into first class journeymen electricians. To this end, we do not make tool-passers of them. Instead, we put them on jobs which should be within their capabilities, and team them up with senior men who see to it that they do, correctly, the work assigned to them."

Evening Study Included

In addition to their on-the-job instruction, apprentices must spend two evenings per week in an electrical construction class at Miami's Technical High School. Intended to broaden the knowledge of employed adults in the work, upon which they are engaged during the daytime, these night "Extension" classes are conducted under a vocational training program having joint Federal, State, and local sponsorship. Tuition and the use of necessary apparatus is free.

The instructors are practical electrical construction men, who teach the routine "how to do", plus instructors who teach electrical theory. Thus, the trainee learns both the "how and why" of his job. Frequently, class instructors provide "guest speakers," who lecture on various specialized electrical subjects. Incidentally, the school has exceptionally good equipment.

Veterans receiving on-the-job training get a Government allowance of $65, if single, and a maximum of $90, if married. The apprentices currently employed by Southeastern are averaging, in Government allotment and regular wages, $325 per month or better. Moreover, Mr. Miller expresses himself as very well pleased with results of the plan, which he, now, has had in operation for several months.

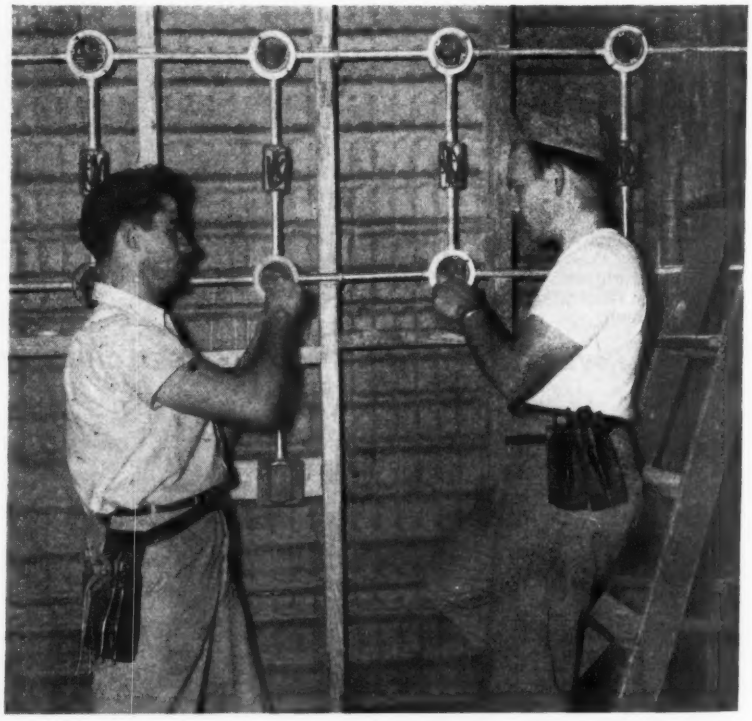
Associated with Mr. Miller, in the firm, as partners, are William A. Daniel and Chas. H. Elliott. Mr. Elliott served during the war as a chief wire officer with the Army Air Forces.

Radio System Speeds Emergency Repairs

Emergency repair work of New Orleans Public Service, Inc., has become prompter and swifter through installation of a $16,500 frequency modulation radio communication system, according to company officials.

The new system provides immediate two-way contact between the service department and a fleet of 20 repair trucks in all parts of the city.

(Continued on page 70)



Wm. A. Daniel (left), Southeastern Electric firm member, "teams up" on an installation with former Army Signal Corpsman R. G. Woodson, who is, now, under on-the-job training with Southeastern. Prior to his entering service, he received some electrical construction training at a vocational school in Western Kentucky.

Give them shadow CONTROL for better drafting

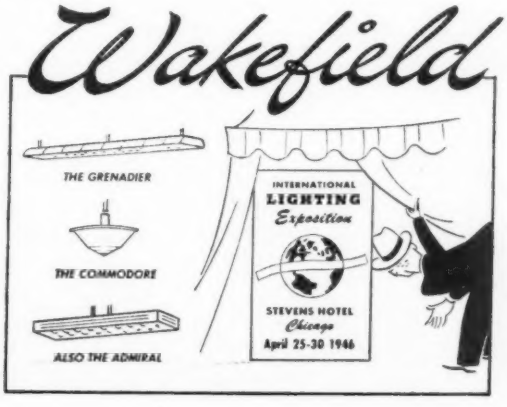
Wanted: Modern lighting for a modern drafting room in the engineering department of the Adamson-United Company, Akron . . . lighting that would speed work, minimize eyestrain and increase working comfort.

Problem: To provide a lighting system that would minimize line-light shadows from drafting tools, make accurate work easier.

Solution: Shadow control with Wakefield GRENADIERS, as recommended by lighting engineers of the Ohio Edison Company. 106 GRENADIERS (No. PG-2483) in continuous rows, spaced 5′ 6″ apart *and mounted at a 45° angle to drafting tables* did the trick. Lighting level after 100 hours operation: 58 footcandles on the boards. And the GRENADIER, with its open top and plastic sides puts pleasing light on walls and ceiling for greater eye comfort, too.

The lighting problems of your customers may call for a different treatment, different fixtures. But you can be certain of this: Wakefield will be glad to work with you to provide a lighting solution engineered to fit your customers' needs. The F. W. Wakefield Brass Company, Vermilion, Ohio.

Are your customers throwing away DOLLARS? *Proper lighting maintenance—cleaning fixtures and walls, and relamping—can double or triple their light. Urge them to get the light they pay for—to keep lighting equipment clean!*



Avoiding Electrical Hazards In Hospital Operating Rooms

HAZARDS in hospital operating rooms resulting from the use of combustible anesthetics have been of the greatest interest to electrical inspectors and those designing electrical installations for such rooms.

After considerable study of the problems involved, a committee of the National Fire Protection Association has prepared a report on recommended safe practice for the use of such combustible anesthetics in hospital operating rooms. In addition to a general introduction and discussion of the nature of the hazards involved, the report discusses ventilation, storage and handling of gases, electrical wiring and equipment, and the reduction of electrostatic hazard.

The hazardous locations to which the report applies are defined as follows:

Hazardous Locations. A room in which any of the hydrocarbon anesthetic gases or any of the ether compounds are stored or used is to be considered a *hazardous location.* The hazardous condition may be considered as extending for a horizontal distance of 10 feet and to a height of 7 feet above the floor outside of any door opening into such a room.

An exception may be made in the case of a room ventilated as specified in Section IV; in such rooms the hazardous condition may be considered as extending to a height of 7 feet above the floor.

Locations of Limited Hazard. Any corridor or room through which a patient is moved during the progress of anesthesia, or through which anesthesia equipment is moved while in an operating condition, is to be considered a *location of limited hazard.* In such locations hazards due to permanently installed electrical equipment should be considered as being the same as for non-hazardous locations; hazards due to electrostatic charges should be considered as being the same as for hazardous locations.

The following paragraphs include the committees recommendations with respect to electrical wiring and equipment:

Section VI
Electrical Wiring and Equipment

Recommendations for electrical wiring and equipment to be used in operating rooms, delivery rooms, and similar places are given in this section.

In hazardous locations, as defined in Section III, all installations and equipment should be in conformity with the standards for Class I, Group C, locations given in Chapter 5, Article 500, of the National Electrical Code. All references to the National Electrical Code are to the 1940 edition.

In locations of limited hazard, as defined in Section III, permanent wiring and equipment should conform to the standards of the Code applying to non-hazardous locations. Portable electrical equipment and appliances, unless of a type suitable for use in hazardous locations, should be excluded from locations of limited hazard during their occupancy by patients or by anesthesia equipment in an operating condition.

In non-hazardous locations all electrical wiring and equipment should conform to the standards of the Code applying to such locations.

Arrangement of Circuits

In hazardous locations all electrical circuits should be fed by an insulating transformer which isolates them electrically from the main feeder and from other circuits in the building. This transformer should be of the dry type and should be installed outside the hazardous location. It may be considered as a special form of branch feeder. The primary winding should be connected to the main feeder, in the same manner, and with the same control and protective devices, as any other branch feeder of the electrical installation. One side of the primary circuit should be grounded in an approved manner and the other side provided with an approved overcurrent device located outside the hazardous location. The primary winding should never be connected directly to a high voltage circuit. Both sides of the secondary circuit should be ungrounded and an approved overcurrent device should be provided in each side of every branch circuit connected thereto. Voltages across the ungrounded circuits should not exceed 115 volts.

In addition to the usual control and protective devices the ungrounded system should be provided with a ground contact indicator arranged as follows: A resistor of not less than 10,000 ohms should be connected across the secondary circuit of the transformer. A relay, installed outside the hazardous location, should be connected with its winding between the mid-point of this resistor and ground. The relay should operate when either side of the secondary circuit is connected to ground.* A signal lamp showing a green color, installed in some conspicuous location, should be connected to the back contact of the relay so that it shall be lighted when no current flows through the relay winding. A signal lamp showing a red color, installed adjacent to the green lamp, should be connected to the front contact of the relay so that it shall be lighted when current flows through the relay winding. Warning is thus given of any connection between either side of the secondary circuit and ground and, hence, of any hazardous defect in any wiring or equipment connected thereto.

Service Equipment

All service equipment, switchboards, or panelboards should be installed in a non-hazardous location.

Overcurrent Devices

All overcurrent and other protective

***For a given value of resistance across the secondary circuit the relay will receive maximum power when the impedance of its winding is equal to ¼ of this value. The voltage across the relay winding in this case will be ¼ of that across the secondary circuit.**

Write *"Adequate Protection"* into Today's Wiring Plans

THE contractor who installed this wiring system has given the owner and occupants of the building the maximum in protection. He has fully met the high standards of the National Electrical Code by installing standard-threaded full-weight rigid steel conduit — Youngstown's Buckeye Conduit.

Full-weight rigid steel conduit is the only recognized adequate protection against short circuits from moisture, vapor, dust, dirt, or explosion, in hazardous locations and occupancies. It is the best protection against vibration and crushing. It discourages tampering by unauthorized or well-meaning amateurs.

In the wiring systems you are now planning for new plants or for plant modernization, you can guarantee adequate protection in this same way, by specifying Youngstown's full-weight rigid steel conduit — Buckeye Conduit.

Buckeye has been furnishing uniform, all-round protection for electrical wiring for more than a third of a century. Preferred by leading contractors, it is available through distributors from coast to coast.

Ask your distributor for:
Youngstown Buckeye Conduit-Pipe and Tubular Products - Sheets - Plates - Electrolytic Tin Plate-Coke Tin Plate-Bars-Rods-Wire-Nails-Tie Plates and Spikes.

YOUNGSTOWN
THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO
Manufacturers of
CARBON - ALLOY AND YOLOY STEELS

devices should be installed in a non-hazardous location.

Wiring Method

In any location all permanently installed electrical wiring should be enclosed in a rigid conduit which is grounded in an approved manner. All wiring should be installed as specified in Section 5014 of the National Electrical Code. Special attention should be given to sealing the conduits in accordance with Section 5014-b of the National Electrical Code.

Grounding

In any location, the exposed non-current-carrying metal parts of equipment such as the frames or metal exteriors of motors, fixed or portable lamps or appliances, fixtures, cabinets, cases, and conduit should be grounded as provided in Article 250 of the National Electrical Code. The locknut-bushing, and the double locknut types of contact should not be depended upon for bonding purposes, but bonding jumpers with proper fittings or other approved means should be used. All grounding should be installed as specified in Section 5025 of the National Electrical Code.

Lighting Fixtures

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5020, lamps in fixed position shall be enclosed in a manner approved for us in explosive atmospheres, and shall be properly protected by substantial metal guards or other means where exposed to breakage. Lamps shall not be of the pendent type unless supported by and supplied through hangers of rigid conduit or flexible connectors approved for use in explosive atmospheres. If rubber covered conductors are used they shall have insulation not less than 3/64 inch thick. Rigidly mounted fixtures shall be strongly supported.

Exceptions may be made, as follows, provided the room ventilation fully meets the specifications of Section IV:

(a) In the case of permanently mounted lamps, either fixed or adjustable, which are so constructed and so located that no part may be brought within 7 feet of the floor.

(b) In the case of lamps mounted in or behind the walls in housings ventilated independently of the atmosphere of the room and from which this atmosphere is excluded by substantial vapor-tight glass windows, no portion of which is within five feet of the wall. It is recommended that lamps be replacable from outside the the floor, approximately flush with room so as to avoid disturbing the vaportight seal of the glass window.

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5019, switches controlling lighting circuits shall be of a type approved for use in explosive atmospheres.

Such switches should be of the double-pole type and should open both sides of the ungrounded circuits which they control. Attention is called to the fact that mercury type switches, although producing no exposed spark on operation, when in normal condition, are not approved by the Underwriters' Laboratories for use in explosive atmospheres unless enclosed in explosion-proof housings.

Receptacles and Attachment Plugs

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5023, receptacles and attachment plugs shall be so connected, as part of a unit device with an explosion-proof interlocking switch, that the plug cannot be removed while the switch is in the "on" position, or approved devices in which the circuit is broken in an explosion-proof enclosure shall be used. Such receptacles and plugs shall be of the polarized type which provides a connection for the grounding conductor of the portable cord.

Flexible Cord

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5022, flexible cord for portable lamps or portable electrical appliances shall be of a type designated for hard usage, such as Type S. Such flexible cord shall contain one extra insulated conductor to form a grounding connection for metal lamp guards, motor frames, and all other exposed metal portions of portable lamps and appliances. The outer covering of this grounding conductor shall be finished to show a green color. Portable cords connected directly to supply conductors shall be securely supported so that the probability of a break in the conductors at this point shall be minimized.

Portable Lamps

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5021, portable lamps shall be enclosed in a manner approved for explosive atmospheres and shall be protected against breakage by approved types of guards. Lamp holders for such portable lamps shall be of moulded composition or other approved material and of the keyless type with no exposed metal parts. Portable lamps in hazardous locations should not be equipped with switches. Current should be turned on or off at an explosion-proof outlet receptacle.

Motors

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5016, motors and generators shall be of a type approved for use in explosive atmospheres.

Belting

In any location, all belting used in connection with rotating machinery should have incorporated in it sufficient conductive material to prevent the development of electrostatic charges. A conductive pulley should be used. The conductivity of the path from the pulley to the ground should be considered. If ball bearings are used, the contact between the balls and the races will probably be sufficient. If sleeves bearings are used, some means of conducting the charge from the pulley should be provided.

Control Devices

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5017, devices or apparatus, such as motor controllers, thermal cut-outs, switches, relays, the switches and contactors of auto-transformer starters, resistance and impedance devices, which tend to create arcs, sparks, or high temperatures, shall not be installed unless such devices or apparatus are of a type approved for use in explosive atmospheres.

It is recommended that such devices be installed in a non-hazardous location and actuated by some suitable mechanical, hydraulic, or other non-electrical remote control device which may be operated from any desired location. This applies particularly to foot and other switches which must be operated from a location at or near the floor.

Suction and Pressure Equipment

In any location suction appartus should be of the aspirator type, driven either by compressed air or by water jet. Where necessary to use motors for driving the pumps of suction, pressure, or insufflation equipment, whether of the unit type or of a type having a common pump installed outside a hazardous location, they should be of a type approved for use in explosive atmospheres. The pumping equipment and any non-electrical auxiliaries would be of a type approved for use with explosive vapors.

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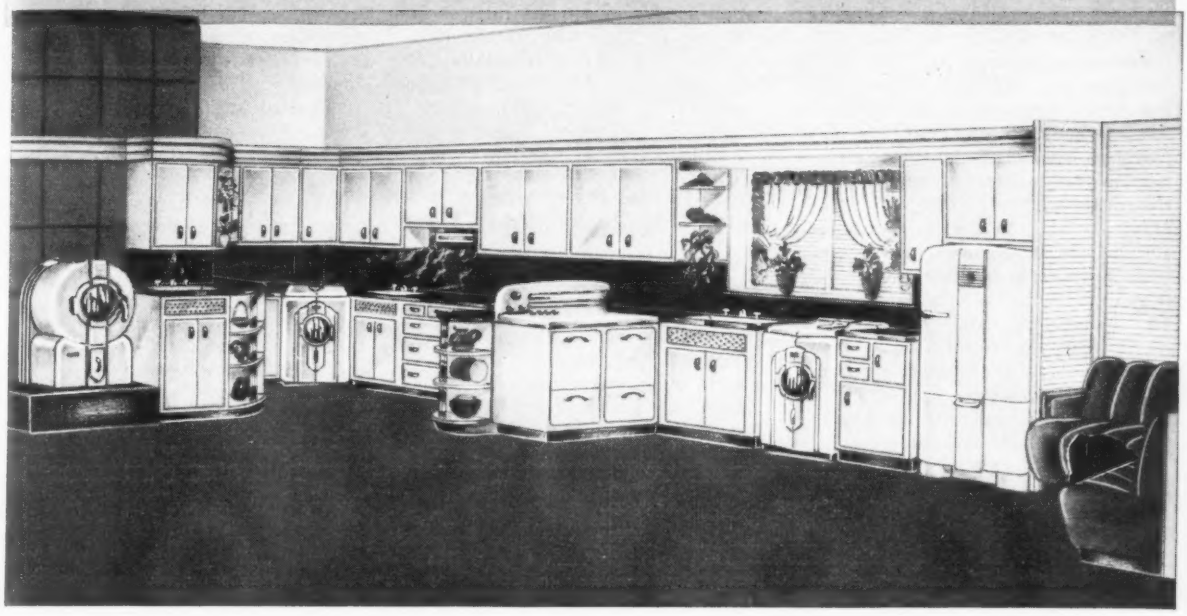
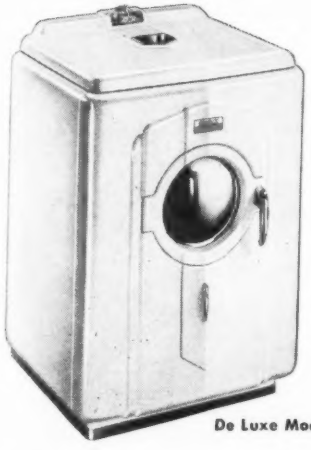
How Bendix Dealers Benefit from the BENDIX HOME LAUNDRY INSTITUTE!



Another BENDIX "*plus*"—Devoted to Home Laundry Planning and Procedure—Research and Demonstration!



De Luxe Model

The BENDIX Home Laundry Institute is not only conducted for practical research and educational purposes, but also for the purpose of assisting dealers to make more and better sales.

Training Material for home service directors on new laundering methods and procedures is available—as well as the latest facts on washing, ironing, soaps, detergents, bleaches, starches, etc.

To date, 79 distributor home service directors, and approximately 1500 certified specialists have been trained to conduct post-sale demonstrations in the home.

The Institute works hand-in-hand with the engineers and chemists of the Bendix engineering laboratory—and maintains close contact with manufacturers of related laundry products—with colleges and universities—with public utility and department store home economists—with the household equipment editors of the leading national magazines.

All of these activities and services help Bendix Home Appliance dealers in one way or another—all of them contribute to the already overwhelming public preference for the Bendix automatic "washer".

So far as we know, no other company offers so complete and so helpful a service to its dealers.

BENDIX automatic **Home Laundry**

Bendix Home Appliances, Inc., South Bend, Ind.... Pioneers and Perfectors of the automatic "Washer."

NEWS of the INDUSTRY

Supervisory Employees Given Training Program

ARKANSAS Power and Light Company, after months of study, has initiated a comprehensive training program for supervisory employees which has been announced by C. V. Hussey, personnel manager.

Embracing a series of some 125 meetings, this "Make Our Company the Best" program feature is built around training more than 200 employees in supervisory jobs, the fundamentals of business in general and the company in particular. Each participant will attend eight meetings, and the supervisory training series of films and records will be used as a vehicle in following the program through on an objective basis. The film requires about 30 minutes, leaving an hour and a half for discussion period. During this period the application of the principles discussed in the film to everyday problems will be followed: this to be supplemented by additional information and material covering subjects such as economics of the utility business, governmental operation of utilities, regulation of utilities, federal, state, and municipal matters affecting business-managed utilities, etc.

As general company information for employee use is prepared, it will be presented at these meetings at the appropriate point in the discussion. This material will cover financial structure of the company, functions of the various departments, rate reductions, taxes, rural electrification, and other facts and statistics about the company. Discussion of company policies such as those included in the employee booklet, engineering specifications, job specifications, safety rules, rates, and other programs will be covered as the need arises, preferably in response to specific questions or requests resulting from discussions.

Each participant is given a complete copy of an outline covering discussion of the film together with additional prepared data for review before the next meeting. It is anticipated that a considerable portion of this information and material will be made available to and discussed with the individual employee groups working under the various supervisors attending these meetings.

Future plans, upon completion of the entire series of discussions, include a program consisting of published booklets and other informative material for further employee educational meetings. It is felt that one advantage in this program is that present supervisory people play an important part in developing the type of information needed for these booklets, and of course will have a stake in their preparation as well as a wider interest in following through with the general employee program which will follow. Each supervisor will be furnished with a copy of the booklet "Management Standard for Supervisory Personnel."

Four Folders Feature Wiring Modernization

A DIRECT MAIL wiring modernization campaign of the National Adequate Wiring Bureau, 155 East 44th Street, New York, N. Y., features four attractive advertising pieces which will help to awaken consumer to the advantages of having an efficient, properly-designed wiring system, and to stir them to action by urging immediate consultation with an electrical contractor.

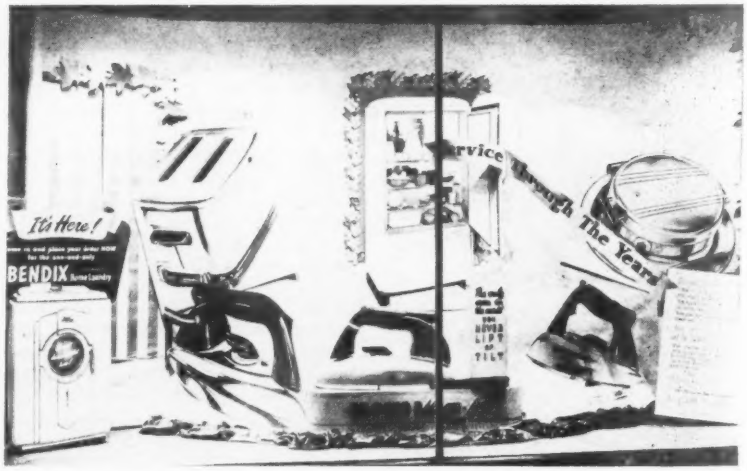
Three of the pieces are aimed at three specific types of prospects:

"Spend less time in Your Kitchen and Laundry" will interest those planning to streamline either of these rooms. Here adequate wiring is discussed mainly from an efficiency standpoint, since greater efficiency is the primary consideration in the minds of those contemplating kitchen or laundry modernization. This folder also contains a wiring check list to stimulate action—the list covers all the wiring requirements and recommendations for the kitchen and laundry as set forth in the national wiring standard.

"Modernizing Your Home" will in Every Room" will interest women convate, or make general repairs.

"Beauty, Comfort and Livability in Every Soom" will interest women concerned with decorating problems because it emphasizes the dependence of home beauty and comfort upon a well-designed wiring system. The check list of electrical aids to beauty and comfort will stimulate action by showing these prospects exactly what wiring improvements are needed to achieve desired decorative results.

The fourth piece, "Check Your Wiring," is for general use. A layman's digest of the national wiring standard, this 16-page booklet gives the wiring requirements room-by-room. Each two-page spread contains a small box for listing needed electrical conveniences so that those contemplating wiring modernization will have a guide handy when discussing their



DON'T KEEP 'EM GUESSING; SHOW 'EM—is the belief of the management of Jenkins' Music Shop, Kansas City appliance dealer, who uses jumbo displays to show his customers what they can expect shortly in convenience appliances. Headliner of the show is the Never-Lift iron which saves the user the lifting of two and one-half tons of cumulative weight every ironing day. With automatic washers and irons that she doesn't have to lift, Mrs. American Homemaker will have more time for "living." Jenkins' policy of First Come-First Reserved drew crowds eager to place orders for electrical appliances "coming soon."

HERE'S EXACTLY what so many of your customers have been waiting for—an R&M De Luxe Fan! In 10, 12, and 16-inch sizes, these smartly styled two-tone beauties whip up a whale of a breeze with scarcely a whisper. For those who buy the best!

THIS SOLVES THE PROBLEM for those who want a good fan at a popular price—the handsome, quiet R&M Banner line. In 8-inch non-oscillating and 10, 12, and 16-inch oscillating models. When folks buy from you, their fan dollars can't go further!

MADE TO ORDER for those who want to cool an apartment or small house—the R&M Portable Home Cooler. No belts—no pulleys. Self-oiling and rubber-mounted for silence. In 24 and 30-inch blades. Both do a big cooling job. Yet simple construction keeps prices attractive.

Here's why you'll find it easier to sell R & M Fans

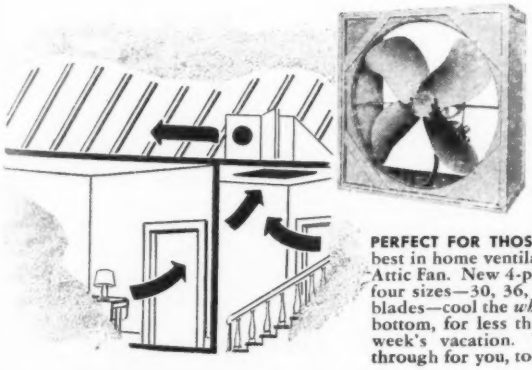
● This line is *complete.* There's an R&M fan for every cooling problem—a single room to a whole house. How much easier that makes your selling job! It's a lot easier than trying to stretch a "thin" line too far.

Production on R&M fans is in high gear. But so is demand. So list your needs now with your nearest R&M Fan Distributor *or* mail the coupon below for his name, address, and samples of our new fan literature. Do it now and be set for the selling season.

ROBBINS & MYERS • INC. SPRINGFIELD, OHIO

In Canada: Robbins & Myers Co. of Canada, Ltd., Brantford, Ontario

JUST RIGHT in business or in the home, R&M Air Circulators are perfect for still others in your trade. For floor, bench, wall, or ceiling mounting, in 24 and 30-inch sizes. The right installation is always easier to sell . . . and this one will be right for many of your customers.



PERFECT FOR THOSE who want the best in home ventilation—the R&M Attic Fan. New 4-paddle designs in four sizes—30, 36, 42, and 48-inch blades—cool the *whole* house, top to bottom, for less than the cost of a week's vacation. Profitable clear through for you, too!

Mail this COUPON *today!*

ROBBINS & MYERS, INC.,
Fan Sales Division, Springfield, Ohio

Please tell me who my nearest R&M Fan Distributor is and send me new consumer sales-promotion literature on the R&M products checked (√).

☐ Home Coolers ☐ Attic Fans ☐ Air Circulators
☐ Banner Fans ☐ De Luxe Fans

Name .....

Firm Name .....

Address .....

City ..... *Zone* ..... *State* .....

needs with an electrical contractor.

All four advertising pieces are designed for use in direct consumer promotion or for a cooperative tie-in with financing agencies and electrical contractors. Further information may be obtained by writing the National Adequate Wiring Bureau.

Georgia's Locker Total Leads in the Southeast

GEORGIA is pronounced a veritable garden spot for the growth of locker plants as she saw the completion of 33 more locker plants in 1945, bringing the total to 101 in operation.

Quite a number of plants are being added to this total this year, and it has been predicted by those close to this type of work that by 1950 over 500 plants will be in operation in the State of Georgia alone.

A conservative estimate for the entire country was recently placed at 15,000 by R. E. Nagler, frozen food consultant, of Chicago.

According to a recent survey made by the National Frozen Food Locker Association, the greatest gain in the number of plants of any year in the history of this industry was in 1944, with 1945 running a close second. Undoubtedly, 1945 growth was held back considerably by inability to obtain materials and equipment. Assuming that deliveries of equipment and other needed materials become more nearly normal during 1946, the current year will probably show the largest increase in number of locker plants of any because there is at present a considerable inventory of uncompleted plants and plants still in the planning stage which would normally have been finished in 1945 but will now swell the 1946 total.

Georgia today is leading the rest of the Southeast, the closest runners-up being Mississippi and Tennessee with 80 plants each. Due to the fact that building materials are more plentiful in the South than in other parts of the United States, it is reasonable to assume that, if refrigeration equipment and insulation materials can be had in sufficient quantities, Georgia's locker plants will grow by leaps and bounds this year.

Chance Co. Purchases Bowie Switch Company

A. B. CHANCE Company, Centralia, Mo., manufacturers of pole line construction and maintenance equipment, has purchased the Bowie Switch Company, of San Francisco. J. A. Martin, now superintendent of the Centralia plant will be transferred to San Francisco, and J. T. Isbell, who has been vice-president and in charge of sales since 1939, will become vice-president and San Francisco manager.

DOOR CHIME WITH DOUBLE PERSONALITY—A beautiful bracket-shelf that's also a door chime forms the double personality of the "Empress Eugenie." Antique white, in carved effect, the shelf serves an ornamental purpose—holding plant, knickknack, or clock, and its design blends with any style of interior decoration. Enclosed in the bracket-shelf is a beautifully toned door chime which sounds an harmonious two-note melody for the front entrance and a single peal for the rear door.—(Photo courtesy of Edwards and Company.)

J. L. McDonald Joins Firm with Brothers

JOHN L. MCDONALD has entered the sales and promotion division of McDonald Brothers, Philco distributors, 963 Union Avenue, Memphis 3, Tenn., having returned from five years' service in the Army. He entered the Army as a private and rose to captain in the Quartermaster Corps.

John L. McDonald

Mr. McDonald is a brother of J. G. McDonald, head of the firm, and J. W. McDonald, also in the firm.

Widespread Use for Aluminum Predicted

WITH the aluminum production capacity in the United States twice the total world consumption in 1939, the nation's aluminum industry is putting into effect intensified 1946 sales campaigns to promote the greatest possible use of the metal, according to Roy A. Hunt, president, Aluminum Company of America, Pittsburgh.

Aluminum emerged from the war a better metal for many new purposes, and is now available at the lowest price in history. Manufacturers and fabricators plan to take advantage of these conditions to utilize efficiently not only the enlarged production facilities for primary aluminum but the heavy supply of scrap now available. Estimates of the supply of aluminum scrap range from one to three billion pounds.

Alcoa looks forward to sharp expansion in its sales force and distributing program. The company has recently opened 11 new regional sales offices and is planning to open five more, some in areas where Alcoa previously had no direct sales representation. The company is now selecting qualified men for sales engineering work and preparing them in a thorough training program in its various works. Many of these men are returning servicemen

Anybody here seen Seymour?

. . . He's another Sales-maker that will build your business selling G-E Lamps.

Better get to know Seymour! He and his twin brother Buymour are the heroes in the General Electric Lamp Department's fast-moving, full-color slide film called, "Lighting That Moves Merchandise." It's a 20 minute practical, "How-to-do-it" picture. And it shows retailers plenty of tangible examples of just how modern sales lighting can be installed and what it will do for them.

Store lighting prospects are ready now in your own sales area—8 out of 10 store owners want to improve their lighting. And they will want to see and hear this persuasive pair (Seymour and Buymour) dramatize the many profit possibilities of "Lighting That Moves Merchandise." It's a specific, inclusive film that:

1. outlines a general pattern of good store lighting, including store front, general interior and special display lighting;
2. explains how a general pattern of lighting can be tailored to fit any specific store need;
3. tells how little it costs to obtain a modern sales lighting installation.

DON'T DELAY!

Ask your G-E Lamp Representative for complete information about "Lighting That Moves Merchandise."

who gained experience with aluminum during the war.

As evidence of the growing acceptance of aluminum for new applications, a trend the industry hopes to accelerate during this year, the industry will depend for volume, in part, upon applications · comparatively little known till now in a number of the nation's largest industries. New types of roofing sheet to tap a tonnage market are now being introduced to the building industry, and should account for hundreds of millions of pounds.

The nation's railroads, seeking modern, more attractive and lighter equipment, are specifying aluminum in many applications for 1946. Other forms of transportation, such as trucks, trailers, buses, and airplanes will employ large quantities of aluminum.

Among smaller items already in volume production is a line of aluminum canoes weighing only one-half to two-thirds as much as their counterparts made of other materials. Some of the new packaging applications developed during the war will have post-war applications. Aluminum caps and seals made for penicillin bottles will have peace-time counterparts in packages designed for pharmaceutics, while heat-sealed aluminum foil envelopes used during the war will protect and display such products as dehydrated soups and powdered fruit juices.

INTERSTATE HOLDS 4-DAY SALES SESSION—The sales force of the Interstate Electric Company held its semi-annual meeting recently at the Jung Hotel in New Orleans, La. Besides the sales force of 24 members, 30 manufacturers' representatives were present during the four-day session, emphasizing the company's importance as a distributing agent. Shown here are several of the manufacturers' executives and representatives. Seated, from left to right: Thoben F. Elrod, Atlanta, district manager, Deep Freeze Home Freezers; Percival Stern, New Orleans, president, Interstate Electric Company; Frank W. Knecht, Jr., Warren, Ohio, sales manager, Youngstown Kitchens. Standing, from left to right: George Jeffers, Fort Wayne, Ind., district manager, Farnsworth Radio & Telegraph Corp.; D. F. Rucks, Jr., Birmingham, Ala., regional manager, Youngstown Kitchens; Bart N. Eberlin, Chicago, district manager, New Home Sewing Machines; and Carl Birkhold, New Orleans, district manager, Proctor Electric Co.

Comic Book Simplifies Story of Electricity

A 20-PAGE, full-color comic book explaining how electricity is generated and distributed has been just released for the use of electric light and power companies by the Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Entitled "Jim's Adventure," the comic book used everyday experiences to tell the complex story of electricity. The narrative is about an educational trip taken by a small boy and his uncle. They visit a steam generating plant, follow the electric power lines from the station back to the boy's home, and in the end, the uncle explains to the boy how electricity is metered.

A two-page drawing outlines the basic steps in steam and electrical generation and power distribution, from boiler to light switch. On the back cover is printed a brief glossary of common electrical terms.

"Jim's Adventure" should find wide use in schools, since it teaches the fundamentals of electricity by simple and accurate analogies. Contents have been carefully checked with practicing electrical engineers.

The comic book format was selected by the publishers as best suited to the telling of an educational story in popular style. While the dialogue is simple in language, no sacrifice has been made to accuracy. The booklet is intended to have appeal for both young people and adults.

Allis-Chalmers is making "Jim's Adventure" available to any supplier of electric power and light who request it, charging a slight fee to help defray the cost of printing. Distribution to schools and consumer groups will be through the local electric light and power companies.

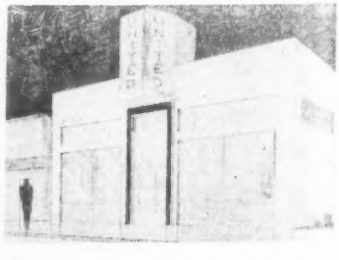
Meter Men's Annual School to Be in May

THE SOUTHEASTERN Meter Men's Association will hold its annual short school for electrical meter men at the University of Florida, Gainesville, Fla., during the week of May 6th, Monday through Friday, inclusive, according to an announcement by Professor Ed Smith, of the University.

The program for the school will include instruction in basic courses such as meter theory and practice which will be particularly helpful in the training of new men.

Among those who will participate in the program are Dr. D. T. Canfield, well known author on metering practices, who will present a talk and demonstration entitled "Why the Disk Turns;" Joe Langdell, Commonwealth and Southern Corp.; Art Carvill, Ebasco Services, Inc.; M. Bartleson, City of Jacksonville Electrical Department; and Professor Smith, John Wilson, and D. Sashoff, all of the University of Fla.

Further details about the school may be obtained by writing the president of the association B. Z. Segall, New Orleans Public Service, New Orleans, or the secretary, Wade Mahannah, Florida Power and Light Co., Ft. Pierce, Fla.

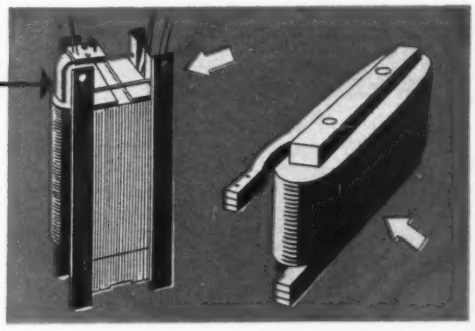


READY FOR OCCUPANCY — The new home of United Appliance Co., 704-705 Crawford Ave., Houston, Texas, was scheduled to be ready for occupany about April 1. This company represents Cadillac electric vacuum cleaners and portable electric blowers; B. F. Goodrich wringer rolls and "V" belts; Mall hand drills and flexible shaft grinders; Belden cords and plugs; Bar-Brook attic fans; Signal electric drills; and "Brillo."

3 LEADERS *in internal curing*

INSULATING VARNISHES

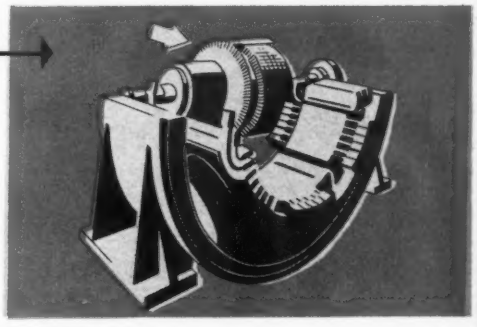
For Transformers



IRVINGTON #100

A clear internal drying varnish noted for long-life at high temperatures. Life test of over 1100 hours at 105°C. Thorough penetration and curing is obtained even in the deepest windings. Provides firm, though flexible, transparent bonding, so clear that coded leads are readily identified. Possesses excellent electrical properties, and is oil, acid and moisture resistant.

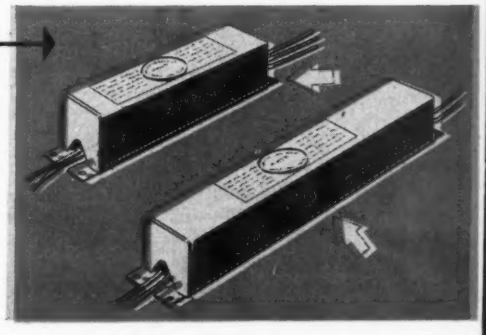
For Motors



HARVEL #512C and 612C

Phenol-aldehyde type varnishes derived from Cashew Nut Shell Liquid. Set dry throughout by heat induced chemical polymerization, thus cannot leave gummy half-cured interiors. Provide high insulation resistance at all temperatures, and are outstanding in this feature at operating temperatures up to 300°F. Extremely resistant to acids, alkalis, moisture, and oilproof.

For Fluorescent Transformers and Ballasts



HARVEL #612C

Now widely used by Fluorescent Ballast manufacturers, because the unique structure of this cashew varnish aids greatly in keeping ballasts hum-free.

All the above varnishes will cure most satisfactorily under conventional convection baking methods, or infra-red. For complete information write Dept. 46, Irvington Varnish & Insulator Company, Irvington 11, New Jersey.

IRVINGTON *Varnish and Insulator Company*

Irvington 11, New Jersey, U.S.A.

Electromaster Names J. A. Bell Director

ANNOUNCEMENT is made by Gerald Hulett, vice-president of Electromaster, Inc., manufacturers of electric ranges and water heaters, of the appointment of Major J. A. Bell as director of utility sales. In his new position, Mr. Bell will be responsible for the company's national sales to direct utility customers.

J. A. Bell

A member of Electromaster's sales staff for 11 years before the war, Mr. Bell served as district manager covering Illinois-Missouri-Indiana-Iowa territory, and for three years was executive assistant to the vice-president in charge of sales. Previously, he was a sales executive connected with utility companies in Topeka, Salina, and St. Louis.

Electrical Group Holds Annual Meet

NEARLY 300 members and guests gathered in Raleigh, recently for the annual Institute for Electrical Inspectors, Contractors, and Electricians, on March 19 and 20.

The Institute was sponsored jointly by the North Carolina Chapter, IAEI; N. C. Insurance Department; N. C Board of Examiners of Electrical Contractors; N. C. Association of Electrical Contractors; and North Carolina State College.

The two-day program was designed to cover a wide range of subjects of mutual interest to the sponsoring organizations. The program, over which N. E. Kennedy, president of the North Carolina Chapter, IAEI, presided, included addresses by Lee Adams, General Electric Co., Schenectady, N. Y.; J. S. Mahan, chairman, Membership Committee, IAEI, Chicago, Ill.; Dwight L. Casey, manager, Virginia & Carolinas Chapter, NECA, Charlotte, N. C.; H. G. Knoderer, General Electric Co., Bridgeport, Conn.; C. S. Whitaker, city electrician, Durham, N. C.; Howard R. Pancoast, Bryant Electric Co., Inc., High Point, N. C.; and Victor H. Tousley, secretary-treasurer, IAEI, Chicago, Ill.

Work on Lieberman Power Plant Begun

THE SOUTHWESTERN Gas and Electric Company in Shreveport has begun work on its new $3.000,000 power plant to be completed and in operation early next year, with 100,000 kilowatts capacity.

The plant, to be located near Mooringsport, La., 15 miles northwest of Shreveport, will be large enough to house two turbine generator units. A high-pressure, high temperature type turbine will be employed, using steam at 850 pounds per square inch pressure at 900 degrees Fahrenheit. It will be cooled by hydrogen.

The project has been named the Lieberman power plant in memory of A. Lieberman, president of the company from 1929 until his death in 1942. It will be modern in every respect, and boost by several times the present power capacity of the company.

Speaking at the ground-breaking ceremonies, Clyde Fant, Shreveport commissioner of public utilities, stated:

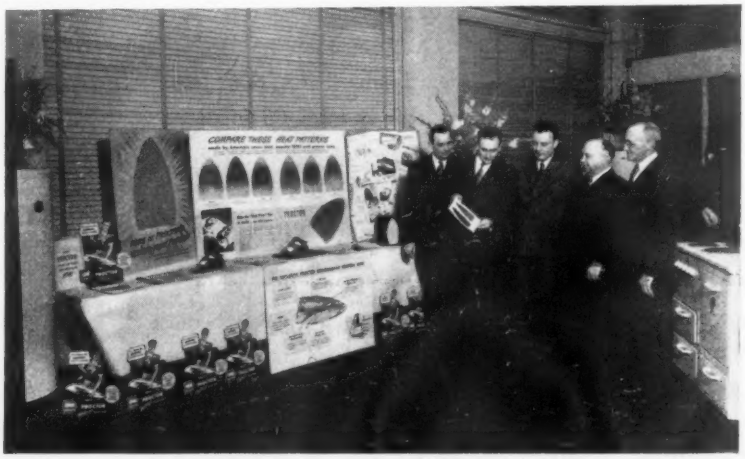
"The people of the Southwest must surely admire the courage of this company in beginning this new plant at a time when it is beset on all sides by threats of government encroachment on the electric industry."

"The growth of the Southwest area both in population and industrially is probably nowhere better marked than by the progress of the electric industry," declared Frank M. Wilkes, president of Southwestern Gas and Electric Company, at the building ceremonies.

"The construction of the Lieberman plant will furnish our company with adequate power for its own needs and in addition will provide us with enough power that it may come to the assistance of neighboring utility companies in Texas, Oklahoma, and Arkansas in the event of emergencies on those systems."

Quarter-Million Calls Made on Customers

NEARLY a quarter of a million calls on customers of the Georgia Power Company were made during the year 1945 by employees of the customer and home service divisions and engineers of the commercial lighting, rural and industrial divisions. An analysis of the total of 246,349 calls made indicates that on the average eight out of every ten customers of the power company received a personal visit by some



HEAT PRINT PATTERNS SCORE WITH DEALERS—Carl Birkhold, New Orleans district manager for the Proctor Electric Company, Philadelphia, reports the interest of the dealers in the iron heat print patterns demonstrated at the 12th anniversary celebration of R. P. McDavid & Co., Inc., at Birmingham, Ala. Mr. Birkhold is seen showing two perfect Proctor heat prints to (left to right) James W. Whatley, territory sales manager, R. P. McDavid & Co., Inc.; Guy S. Finley, city sales manager, R. P. McDavid & Co., Inc.; Joseph R. McDavid, secretary-treasurer, R. P. McDavid & Co., Inc.; and Dick S. Richard, residential sales manager, Birmingham Electric Co.

company representative during the year—a visit that rendered some service to the customer.

Included in the calls made by customer and home service division employees during the year were 32,337 for the purpose of making appliance repairs in the homes; 26,503 for instructions on fuse renewals; and 142,736 for instructions on appliance operation. Contacts by employees of the rural, commercial, and industrial divisions totalled 46,717.

Faries Co. Announces Newly Elected Officers

NEWLY elected officers of Faries Manufacturing Company, pioneer lamp and fixture manufacturers, Decatur, Illinois, are as follows: W. J. Grady, chairman of board; W. W. Ellison, president; K. F. Masterson, vice-president in charge of sales; C. Hansen, vice-president in charge of production; E. W. Kelly, secretary; C. A. Laystrom, treasurer; and Paul Ellis, assistant treasurer.

J. V. Everard, formerly advertising manager, has been appointed assistant general sales manager, and E. V. Horrigan, who was formerly with Caterpillar Military Engine Company, has been appointed advertising manager.

Contracts have been let for 115,000 square feet of new factory floor space, a new building 185 x 620 feet. The new building will be equipped with the latest type of machinery. It will be lighted throughout with Faries fluorescent fixtures of the latest design.

Faries reports that their booked orders will require 2-shift production. The supervising staff for the second shift is standing by, awaiting the accumulation of sufficient materials to operate the second shift.

Oklahoma Chapter, NECA, Holds Annual Meeting

THE ANNUAL meeting of the Oklahoma Chapter, National Electrical Contractors Association, was held in March in Tulsa. George Gaddis, of Oklahoma City, was elected president.

Other officers elected included the following: Guy Emerson, Tulsa, vice-president; and H. J. Reeves, Oklahoma City, treasurer. Marvin R. Osborne, of Oklahoma City, was elected as a member of the Board of Governors.

Members of the executive committee, in addition to the above officers, are Ralph Snyder, Ponca City; Frank Deshon, Tulsa; Clarence Veale, Tulsa; and Harold Walker, Enid.

How to Win Friends and Influence Profits — Replace with T-K Units

Right now—as you read this—there are many electric ranges in your community with one or more burned-out cooking units which should be replaced with new T-K Replacement Units.

Here is a ready-made market—a *profitable* market for you. Every time you install a genuine T-K Replacement Unit you not only make a quick profit—you make a friend who is a prospective customer for other electrical goods and services you sell.

But—this is important—be sure to replace always with T-K Units. Each is backed by 25 years of skill and experience; each is built to give honest service for a long time. You don't need a large stock—two sizes, plus a few adapter rings for various makes of ranges are all you require.

If you don't know nearest T-K distributor's name, write us direct.

TUTTLE & KIFT, INC.

1825 NORTH MONITOR AVENUE • CHICAGO 39, ILLINOIS

MANUFACTURERS • DOMESTIC AND INDUSTRIAL HEATING UNITS • SWITCHES • CONTROLS

L. T. Allen, former president of the chapter, and also national executive committeeman for Division Five, NECA, presided at the meeting.

The chapter recently announced the removal of their offices to the Perrine Building, 119 N. Robinson, Room 918.

Florida Power Corp. Now "Publicly Owned"

THE OUTSTANDING event of 1945 for the Florida Power Corporation was the fact that it became a "publicly owned" utility in the most democratic sense of the word. It was released from holding company control as General Gas and Electric Corporation stockholders received Florida Power stock in exchange for their holdings.

During the year five outstanding business leaders, from the territory served by the company, were elected to the board of directors and they, with four officers, are now "masters of the company's destiny" as an electric utility serving customers in 27 counties in the state. Also taking place during 1945 was the acquisition of the Georgia Power and Light Company as a wholly owned subsidiary of Florida Power Corporation.

Members of the board now are: E. T. Brown, treasurer of Rollins College, Winter Park; O. A. Brice, publisher, Lake Wales News; R. J. McCutcheon, Jr., St. Petersburg investment banker; W. M. Palmer, president, Dixie Lime Products Company, Ocala; A. Waller Smith, president of the Bank of Clearwater; president, A. W. Higgins; vice president and secretary-treasurer, E. K. IlgenFritz, vice president, J. F. Bailey, and comptroller, W. C. Schoeppe.

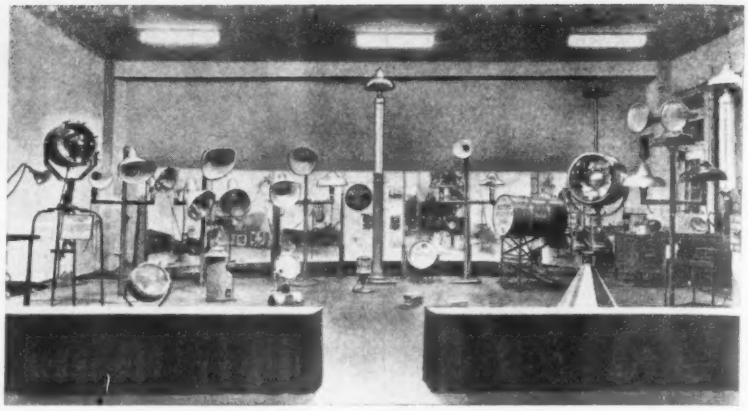
Mills-Morris Erects Appliance Building

MILLS-MORRIS Company, Memphis, Tennessee, has let contract for the construction of a new building at 183-187 South Dudley Street, adjoining the present quarters of the company at 171-181 South Dudley Street, and when completed, the two buildings will have a combined frontage of 215 feet on South Dudley Street. Construction is to be completed about May 1.

The buildings will provide the company with 47,000 square feet compared to its present 23,000.

The new building of this 26 year old concern will be used for display rooms, offices, and warehouse for the distribution of Motorola home and auto radios, radio parts and equipment, refrigerators, washing machines, and electric appliances. This will be operated as a separate division of its automotive equipped and parts department.

The company, which has 18 salesmen on the road, operates a division in Nashville under the name of Auto Bearings and Parts Company. Branches of Mills-Morris Company are located in Union City and Milan, Tennessee and Greenville and Tupelo, Mississippi.



"LIGHTING THAT'S INVITING"—The display of the Revere Electric Mfg. Co., Chicago, at the International Lighting Exposition and Conference, in Chicago, April 25th to 30th, is planned around the firm's slogan "Revere lighting makes service stations inviting." The Revere hinged floodlight pole will be a feature of the exhibit. The exhibit will include efficient aids to service station operations including air, water and light standards designed to change "night time into buying time."

Board Approves Large Construction Budget

THE BOARD of Directors of the Carolina Power and Light Company has approved a construction budget for 1946 calling for expenditures totaling $5,993,866.

The principal item in the budget of nearly $6,000,000 is a total of more than $3,000,000 for rural line construction. The company expects this expenditure for rural lines to bring about the addition of approximately 10,000 rural customers. The sum will provide about 2,500 miles of rural lines and will be a continuation of the company's postwar rural expansion program announced last fall.

The budget as approved, containing nearly 90 different items, also includes funds for high voltage transmission lines, substations, transformers, substation improvement and enlargement, additional lighting protection equipment, and plant improvement. Funds also were approved for the extension of electric lines in towns and cities throughout the system to add about 5,000 new urban customers.

Advance Transformer Acquires New Quarters

THE ADVANCE Transformer Co., manufacturers of ballasts for all types of fluorescent lighting, are moving from their present location at 1161 W. Madison St. to new and larger quarters at 1122 W. Catalpa Ave., in Chicago.

The new plant will occupy over 45,000 square feet of space, all on one floor to facilitate improved production lines and increased efficiency, and this total capacity will be used for the exclusive manufacture of various kinds of hot and cold cathode fluorescent ballasts.

This modern, up-to-date plant, when completed, will be one of the most efficient plants in the country, according to the partners of the business, Mr. Hirsch Epstein and Mr. Louis Duman.

Youngstown Kitchens Announce Managers

MANAGERS have been assigned to 14 of the 15 national regions set up by the Youngstown Kitchens division of Mullins Manufacturing Corporation, it was announced by Charles A. Morrow, vice-president in charge of sales.

All but two, both of whom are in the armed forces, are already in the field. Lieut. Col. Morris D. Durham will establish headquarters in Dallas and Lieut. James C. King in Atlanta.

Other regional men, who serve as factory representatives to 59 distributors handling Youngstown Kitchens, and their headquarters are:

George Duge, Cleveland; G. W. Hipple, Chicago; R. S. Mathison,

Redwood City, California; M. L. Ondo, Washington, D. C.; J. W. Purvis, Detroit; D. F. Sembach, Kansas City; D. F. Ruchs, Birmingham; D. E. Parks, Mt. Morris, N. Y.; F. T. McDonald, Phoenix; H. E. Counselman, Milwaukee; R. W. Hogue, Louisville; and A. L. Reeves, Boston.

Independent Resumes Business April 1st

THE INDEPENDENT Electric Supply Co., Inc., 220 West First Street, Charlotte, N. C., for many years a leading wholesaler for the Southeastern electrical trade, announces the resumption of business on April 1, with S. B. Cardo, as president.

Captain James J. Cardo, who has recently been released from the Army and is a graduate in Commerce of The Citadel, Charleston, S. C., has joined the organization as sales manager.

Va. Utility Approves Construction Budget

THE BOARD of directors of the Virginia Electric and Power Company approved a $10,500,000 construction budget for 1946, Jack G. Holtzclaw, president, announced recently.

The work planned includes a 110,000-volt transmission line from Richmond to the company's Bremo Bluff plant, where it will connect with a similar line to be built from Lynchburg by the Appalachian Electric Power Company.

Mr. Holtzclaw said that the line will enable the companies to exchange power between Lynchburg and Richmond in case of emergency. This item would cost about $1,500,000.

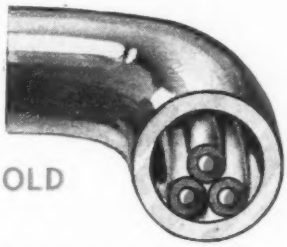
The largest item in the budget is $3,250,000 for an additional boiler at the Reeves Avenue power plant in Norfolk.

Another large item for the Richmond area will be $750,000 to be spent in the construction of a 110,000-volt double circuit transmission line, crossing the James River on towers, to join the Chesterfield plant, near Drewry's Bluff, with the power line between Richmond and Newport News.

Approximately $1,000,000 is included, Mr. Holtzclaw said, for the extension of rural lines throughout the company's territory in an effort to get power to more farms, schools and other rural establishments.

The remainder of the amount will be expended on some 40 or 50 other jobs in all parts of the territory.

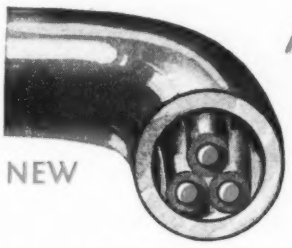
CRESCENT SYNTHOL TYPE T



3 No. 12 Type R Carry 20 Amps.

Allows Larger Capacity On New Installations and Permits

DOUBLE THE AMOUNT of COPPER *in* *Existing Raceways*



3 No. 8 Type T Carry 41 Amps.

Illustration shows ½" conduit

Under present conditions there is urgent need for an economical and quick way of adding to the current carrying capacity of branch circuit conduits already installed. Increasing numbers of electrical appliances, air conditioning units and other equipment call for greater load on these branch circuits.

A simple solution to this problem is to replace present wiring with CRESCENT SYNTHOL Type T (formerly Type SN), which offers an easy and low-cost way approximately to double the current carrying capacity of the existing raceway.

An even greater increase in carrying capacity can be secured by wiring with CRESCENT Type TW in place of lead covered cable in wet locations.

Write for Descriptive Folder on SYNTHOL Type T and Type TW

CRESCENT INSULATED WIRE & CABLE CO.
TRENTON, N. J.

CRESCENT WIRE and CABLE

NEMA

ATLANTA, GA., Edgar E. Dawes, 401-402 Rhodes Building
NEW ORLEANS, LA., Paul Hogan, Jr., 305 Levert Building
RICHMOND, VA., Robert W. Fishburne, 112-114 Exchange Bldg.
DALLAS, TEXAS, M. C. Huie Company, 707 Thomas Building

Names in the News

Stromberg-Carlson's radio sales organization has girded itself for the big selling and merchandising task facing the radio industry. **Clifford J. Hunt,** manager of radio sales for the 52-year-old radio-telephone firm, announced recently that **E. V. Hyde** of Dallas,

E. V. Hyde

Texas, had been appointed district merchandiser.

Mr. Hyde will cover the south central states area, and from his headquarters in Dallas will assist the distributors and dealers of the area in their radio-sales activities.

* * *

Promotions for two division managers of the Arkansas Power & Light Co., effective since January 1, have been announced by Vice President R. E. Ritchie.

R. Bly Wagner, who had been manager of the Central division with headquarters in Pine Bluff for 20 years, was promoted to manager of the Little Rock dviision, with offices in the capital.

W. H. Overby, Jr., for 10 years manager of the Southeast division with headquarters in McGehee, was promoted to manager of the Central division to succeed Mr. Wagner.

C. W. Collier, assistant division manager at McGehee, will continue in charge of the office there until final decision is made regarding the Southeast divison.

* * *

Wagner Electric Corporation announces the following changes in service branch personnel: **H. F. Zahn,** formerly manager of the Atlanta branch, has been made manager of the Philadelphia branch; **C. G. Jackson,** formerly manager of the Boston branch, has been moved to Atlanta to manage that branch.

* * *

E. J. Van Buskirk, vice-president in charge of heating appliances and housewares at Landers, Frary & Clark, announces the appointment of **Ralph F. Moore** as sales representative of the company in Virginia, North and South Carolina and West Virginia on small appliances, housewares, and cutlery.

Mr. Moore, who was recently discharged from the Army after serving four years in the Pacific and European areas, was formerly sales representative for the Goodyear Tire and Rubber Company in New York City. He is a graduate of Columbia University and also attended Harvard Graduate Business School.

* * *

George C. Tanty, who has been associated with Crosley for the past 14 months as merchandise manager in the Middle West and Pacific coast area, will become Southwest regional sales manager, it has been announced.

Mr. Tanty will represent Crosley in Texas, Oklahoma, Arkansas, Louisiana, and Mississippi. Previous to his

Geo. C. Tanty

connection with Crosley, Mr. Tanty had been associated with the Philco Radio & Television Company and also with the Majestic Radio Corp.

* * *

E. H. Fritschel has been named manager of sales of the Tube Division of the Electronics Department of the General Electric Company, according to an announcement by **J. M. Lang,** manager of the division. Mr. Fritschel will have his headquarters in Schenectady. He formerly was sales manager of transmitting tubes.

* * *

Gene Henry has been appointed assistant to the sales manager, in charge of American Kitchens, for American Central Manufacturing Corporation, Connersville, Ind., it has

Gene Henry

been announced by **C. Fred Hastings,** general sales manager.

Mr. Henry, who formerly was district sales manager in the South, will work with Charles Stoup, American Kitchens, manager, in Connersville.

* * *

Two major changes in the management personnel of American Steel & Wire Co., a U. S. Steel Corp. subsidiary, have been announced by **C. F. Hood,** president.

John May, vice-president in charge of sales, has been appointed assistant to the president to aid in general commercial and sales policies. Mr. May is succeeded by **Harry M. Francis** who has been elected vice-president in charge of sales. Mr. Francis has been assistant vice-president.

Mr. May's service with the Wire Company dates back to February, 1909. He was employed as a correspondent in the order department at the New York office, salesman in the Electrical and Wire Ropes Sales Division, manager of Electrical and Wire Rope Sales, and in March, 1931, was made assistant general manager of sales of the American Steel & Wire Company. Mr. May was appointed general manager of sales in March, 1937, and in September of the same year was elected vice-president.

* * *

James R. Logan, newly appointed division vice-president in charge of General Mills' home appliance manufacturing department in Minneapolis, was formerly executive vice-president and general manager of the Allied Control Valve Company of South Norwalk, Conn. He will direct the

manufacture of General Mills' new line of home appliances, including automatic electric irons, pressure saucepans, and coffee makers. Well-known in the appliance and electronics industries, Logan served 14 years with the General Electric Co., where he headed small appliance and electronics production.

* * *

Samuel B. Peppers has been named Southeastern regional sales manager of the Eureka Vacuum Cleaner Company, **George H. Wilkens,** eastern sales manager, announced recently. He will make his headquarters in Atlanta, Ga.

Mr. Peppers has been associated with the company since 1928, except for two years during World War II, when he joined National Fireworks, Inc., at Bristol, Va., to serve as assistant chief inspector. Early last year he rejoined the company as supervisor of the receiving inspection division at company's factory in Detroit, Mich.

* * *

BullDog Electric Products Company announces the creation of a new Cincinnati District sub-office in Louisville, Ky., with **Fred Bush** in charge.

Mr. Bush attended Ohio University and then worked for two years as purchasing agent for the Carbide and Carbon Chemical Corporation, Oak Ridge, Tenn., in connection with atomic bomb manufacturing. He has also been employed as a Graybar sales engineer in Dayton.

* * *

Joseph Bronaugh has been named manager of a newly established Miami branch office of the Allis-Chalmers Mfg. Co., Milwaukee, Wisc., at 1404 Postal-Pacific Bldg., Miami, Fla., according to an announcement by **J. L. Singleton,** manager of district offices.

* * *

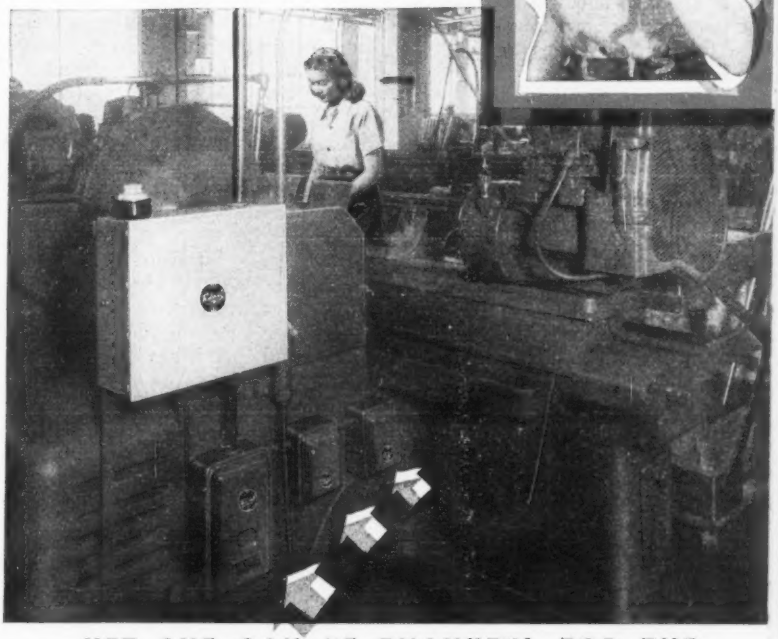
C. E. Barnickel, who has been appointed Bendix Home Appliance Corporation sales manager for Kansas, Missouri, Tennessee, and Arkansas, with headquarters in Kansas City, Missouri.

SHE DOESN'T KNOW A

relay

FROM A

resistor



YET SHE CAN BE THANKFUL FOR THE BUILT-IN DEPENDABILITY OF

Federal NOARK MOTOR CONTROLS

Like "ol' man river", her machine just keeps rolling along. Yet, behind the busy scene, often out of sight and out of mind, you'll find electrical control equipment bearing the honored name of Federal. Designed and built for year-after-year dependability, Federal products are specified wherever performance characteristics are measured in terms of production.

Federal NOARK

FEDERAL ELECTRIC PRODUCTS COMPANY

Executive Offices: 50 Paris St., Newark 5, N. J.

Plants: Hartford, Conn. and Newark, N. J.

Federal Noark Combination Motor Starter: Bulletin 514 Size 1. 250v, 60 amp. fusible for motors up to 5 hp; equipped with motor circuit disconnect switch.

Spot News from the South

Loxley, Ala.—Loxley Electrical Shop is a new firm specializing in refrigeration service, motor repairs, and appliance repairing.

* * *

Mobile, Ala.—James D. Donaghey, plumbing and heating supplies, has moved to a new building at 1776 Old Shell Road and will add electric hot water heaters, washing machines, fans, toasters and radios to his present line of merchandise.

* * *

Mobile, Ala. — Mobile Appliance Company, Inc., is a new electrical appliance firm located at 902 Government Street.

* * *

Prichard, Ala.—Acme Electrical and Radio Service is a new firm here, dealing in electrical appliances.

* * *

Fort Smith, Ark.—Retiring after a period of 40 years' service, Walter S. VanSickel is succeeded by Morgan Wright as Arkansas division manager for the Oklahoma Gas and Electric Company. Mr. Wright has been connected with the company since 1916 and had served as division auditor since 1929.

* * *

McGehee, Ark.—The promotion of W. H. Overby Jr., for the past 10 years manager of the Southeast division of the Arkansas Power & Light Company, to manager of the Central division, with headquarters in Pine Bluff, has been announced by Vice-President R. E. Ritchie. Mr. Overby succeeds R. Bly Wagner of Pine Bluff, who has been made manager of the Little Rock division, with headquarters in Little Rock.

* * *

Mena, Ark.—A new electrical business, to be known as Morrison-Hennigh Electric has been opened here, and is owned by Leon Morrison and Dave Hennigh. The firm is located at 912 South Mena Street.

* * *

Pine Bluff, Ark.—Ross Mauney, former county farm agent of Jefferson County, has assumed his duties as director of the newly created Rural Development Department of Arkansas Power and Light Co. The announcement was made by Executive Vice-President C. S. Lynch.

* * *

Tampa, Fla.—A new business firm, Butcher-Brorein, will open a retail electric appliance store in the Park Hotel building on Lafayette St., soon. The owners are Carl D. Brorein, president of Peninsular Telephone Co., and W. B. Butcher, of Ohio. Mr. Brorein said the firm will handle a complete line of electric appliances. The quarters to be occupied by the firm are being renovated.

* * *

Fernandina, Fla.—City Neon Service is the name of a recently established electrical service concern, owned jointly by Ed Jones and Victor Beckham. The new concern will do all types of electrical contracting work, business and residential; repair any and all makes of electrical appliances, and will specialize in installation and maintenance of neon signs.

* * *

Monticello, Ga.—Monticello's latest business enterprise, Monticello Electric Company, opened recently in the M. S. Benton's Sons building and is owned and operated by J. F. Rearden. The firm will carry home furnishings and electrical appliances. The Benton building has been completely repaired and repainted.

* * *

Waycross, Ga. — The Satilla Rural Electric Membership Corporation's allotment of $184,000 for the construction of an additional 133 miles of rural electric lines has been approved, it has been revealed by W. B. Smith, of Alma, manager of the project. It is planned to serve 438 additional farm homes.

* * *

Rome, Ga. — The Aderholt-Starnes Gas Company, which has opened at 407 West First Street, will carry a complete line of gas and electrical appliances. The new company was founded by Ward Aderholt, who was office manager of the Anchor Duck Mills, and Dick Starnes, who has been in the appliance business in Atlanta.

* * *

Savannah, Ga.—The opening of the Reid Equipment Company at 204 East Bay St. has been announced by Robert D. Reid, Jr. Mr. Reid has secured three floors and offices for distributing to the retail trade of electric and gas refrigerators, kitchen cabinets, radios, washing machines, and other household commodities, including fans, water, oil and gas heaters, frozen food cabinets and various appliances for both domestic and commercial use. The company will maintain a complete service department.

* * *

Waterville, Ks.—Ex-servicemen Guy Roberts and John Russ have opened the Radio and Electric Shop in the former Diefendorf office on Commercial Street. The new firm will specialize on radio and electrical repairs and service.

* * *

Burlingame, Ks. — A complete and up-to-date electrical appliance and equipment store will be opened here by Roger E. Rowe, and modern heating with air conditioning equipment wil be added when it becomes available.

* * *

Caney, Ks. — The Lambdin Appliance Company, of which Howard Lambdin is owner, held its formal opening recently. It is located at 107 West Fourth in the building formerly housing the Oliver & Peister Electric store, which moved across the street. The building has been remodeled and redecorated.

* * *

Kansas City, Ks. — Cecil C. Jones and W. A. Lyons have opened an electrical appliance store and complete phonograph record department at 11 North Seventh Street.

* * *

Kingman, Ks. — Announcement of the opening of Martin and Ferguson Appliance store at 127 North Main Street was made recently by L. H. Martin and C. H. Ferguson. A feature of the store will be a record shop, carrying a complete line of records.

* * *

Marysville, Ks.—The Andrews Electric Shop, 909 Center Street, has been appointed exclusive Norge dealer for Marysville.

* * *

Oswego, Ks.—The Kirk Electric Co., one of Oswego's new stores, is now open at 418 Commercial Street. Clay

The unique idea of using an old refrigerator as an advertising sign has proved a business-getter for the Turner Refrigeration Service, of Topeka, Kansas. Passersby quickly notice the unusual sign.

Kirk, owner, has had 15 years' experience with the Mason Electric Co., of Tulsa, Okla. He will do wiring, repair work, and will carry a full line of electrical appliances.

* * *

New Orleans, La. – The electrical contractor firm, A. T. Gibson Electric Co., 711 Dauphine Street, has been opened here by A. T. Gibson. Mr. Gibson was formerly a superintendent for the D. T. Odom Electrical Contracting Company.

* * *

Shreveport, La.–Arkay Home Appliances, Inc., is a new home appliance store which opened here recently. The store is located at 429 Crockett Street.

* * *

New Orleans, La.–Robert L. Simpson, president of the C. T. Patterson Co., appliance wholesalers, was elected president of the Board of Commissioners of the Port of New Orleans for 1946. The position, which carries with it authority as operating head of the big Louisiana port, is an honorary one, with Mr. Simpson serving without pay.

* * *

Baltimore, Md.–Atlantic Electric Supply Company moves to 115-117-119 Commerce St., from 113 Commerce St. This partnership is A. B. Lessans and Israel Lessans, who have been jobbers of electrical supplies, appliances, and hardware specialties, for a long period of time. Approximately 17,000 square feet of floor space will be occupied on four floors, and the new front has been built of glass bricks.

The Atlantic Lighting Co., Inc., wholesale distributors, will occupy the building at 113 Commerce St., with Samuel Lessans and William J. Rubin, as principal stockholders. The corporation will engage in wholesale distribution of lighting fixtures, lamps, and appliances.

* * *

Pascagoula, Miss. – Robertson's Hardware, owned by W. B. Robertson, was scheduled to be in its new $25,000 brick building by April 15. Almost half of the 3,200 square feet of floor space will be devoted to display of major electrical appliances and samples of home laundries and modern kitchens will be set up.

The new building is of brick and concrete construction. Fluorescent lighting, large display windows, new low-shelf fixtures, and lots of display island tables will feature the new building.

* * *

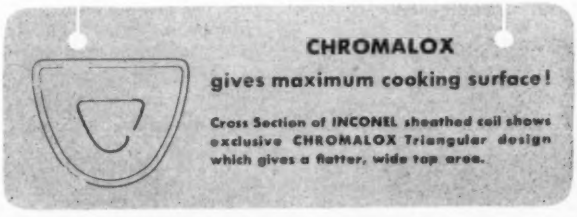
Jackson, Miss. – Graybar Electric Company opened a branch house here recently with A. N. Saxon as manager.

Chromalox Triangular *Electric* Range Units are Easier to Sell

You'll say it's so every time—when you stock CHROMALOX Triangulars. Housewives praise the advanced features . . . and you'll like the faster turnover and profits which are yours with CHROMALOX.

CHROMALOX Triangulars are easier to service and install too. For with only two unit sizes and a supply of low-cost Adaptor Rings you service *all* electric ranges.

Here is your opportunity to capture the range unit replacement market. Write to the address below for folders CF-145 and L-1023 giving replacement data on all electric ranges.


CHROMALOX
gives maximum cooking surface!
Cross Section of INCONEL sheathed coil shows exclusive CHROMALOX Triangular design which gives a flatter, wide top area.

EDWIN L. WIEGAND CO., 7600 Thomas Boulevard, Pittsburgh 8, Pa.
C. B. ROGERS, 1000 Peachtree St., N.E., Atlanta, Ga.
L. R. WARD CO., 403 Southland Building Annex, Dallas 1, Texas.
932 M. & M. Building, Houston 2, Texas.
W. R. PHILLIPS, P. O. Box 2561, Raleigh, N. C.

on new ranges and for replacements

CHROMALOX means *"Electric Cooking at its Best!"*

Jackson, Miss.—Henry B. Sargent, vice-president and general manager of the Mississippi Power & Light Company, resigned recently to become executive vice-president of the Central Arizona Power & Light Co., of Phoenix, Ariz., according to an official announcement from the company issued by Rex I. Brown, president of Mississippi Power & Light Co.

* * *

St. Louis, Mo. — In line with the present trend of establishing separate appliance stores by large organizations, Stix, Baer & Fuller, department store, has opened a new appliance center across the street from their main store.

A building was remodeled at Seventh and Washington Streets, in the heart of the downtown shopping district, and in a first floor shop will have a complete line of appliances, such as stoves, refrigerators, kitchen cabinets, ironers, dishwashers, dryers, laundry equipment, stokers. A model kitchen and laundry will be shown on this floor.

The second floor is rebuilt into an auditorium and kitchen for cooking schools and canning demonstrations. Appliances will be also displayed on the second floor. An accredited home economist will have an office on this floor and may be consulted on homemaking problems by prospective customers.

The policy of the new appliance center as announced by Stix, Baer & Fuller management, is that no advance orders will be accepted for appliance mechandise which is not in stock and on display. They will sell only on a first-come, first-served basis, and said they would put appliances on sale as quickly as they could get them.

Ten thousand women visited the Stix, Baer & Fuller Appliance Center on its official opening day.

* * *

Lebanon, Mo. — A new appliance store has been opened here by E. R. Bethel, who has been an automobile

dealer in the same city for many years. He will continue his automobile and tractor business.

The new store has been opened on the main business street and will feature electric ranges, refrigerators, and washing machines.

On a recent report, it had already been able to obtain and sell 35 electric refrigerators and 42 washing machines. Orders are being accepted if accompanied by a $10 down payment.

* * *

Lenoir, N. C.—Award of a contract to the Miller Construction Company of Linton, Ind., for $382,000 for construction of 311 miles of rural electric lines in Caldwell, Watauga, Ashe, and Alleghany counties has been announced here by G. F. Messick, manager of the Blue Ridge Electric Membership Corporation.

"Construction of lines is expected to begin immediately, and approximately 1,500 farm homes in the Lenoir area will be served by this new construction," Mr. Messick said.

Just when the work will be finished cannot be determined at this time, but it will be done just as rapidly as material and equipment are available, Mr. Messick said.

* * *

Hickory, N. C. — A resolution granting the Duke Power Company a 30-year renewal of its franchise to supply Hickory residents with electricity is expected to be approved by the Board of Aldermen at an early meeting. There is no other bidder for the franchise, City Manager R. E. Smyre stated.

The franchise provides that the company shall pay the city of Hickory three-fourths of one percent of its annual gross receipts from local business in return for the operating rights. Bond of $2,500 for performance of contract has been posted.

* * *

Elk City, Okla.—Formal opening of the Thompson Electric Company in their new quarters at 218 West Broadway has been announced by Jess Thompson, owner. The building has been completely redecorated and features modern display counters and unique tri-color lighting in gold, green, and blue.

* * *

Wewoka, Okla.—Formal opening of Ro-Lof, new home supply and electrical appliance store, in the Hill and Banta building, was held recently. W. B. Loftis and Harold L. Roach are owners and managers of the new establishment. The building was completely redecorated, and has fluorescent lighting, a new style open front, 25-foot storage space, and a warehouse. Claude Brown will have a radio repair shop in the establishment where he will do all kinds of radio repair work.

* * *

Barnwell, S. C.—L. K. Davis has

The modern appearance of the Smythe Electric Company, Johnson City, Tenn., makes it outstanding in the downtown business section and offers competition for attention to swanky dress shops, drug stores, and theater fronts.

announced the opening of The Davis Electrical Appliance Company in the Mazurcky building. Mr. Davis said that branch offices in Williston and Blackville will be opened at an early date.

* * *

Charleston, S. C.—The South Carolina Power Company is installing a new 44,000-volt transmission line to be used as a secondary service line to the territory west of Charleston known as St. Andrew's parish. President Ernest L. Godschalk says that although restrictions on material have been lifted, the matter of delivery is still serious, and it is doubtful whether or not this line can be completed before some time in April.

* * *

Johnson City, Tenn.—Forbes Electric Co., 121 W. Main St., announces that they have been appointed as dealer for American kitchens.

* * *

Amarillo, Tex.—Paul Dollarhide, for eight years with the Southwestern Public Service Company, has opened the Modern Appliance Company at 300 West Tenth.

* * *

Waco, Tex. — The Meals - Oliver Electrical Company has opened at 418 South Fifth Street. The recently organized company, besides maintaining a well equipped sales department of electrical household appliances and radios, operates a day and night service shop. Car radio sales and repairing of these products is a feature of the concern. C. W. Meals, one of the partners, was recently discharged

from the Army, having served as radio repair instructor at Blackland Army Flying School, a few miles from Waco.

* * *

Luray, Va.—D. H. Mims, vice president and general manager of Mims Material Co., Inc., has announced that the electrical appliance department is now established, with Robert B. Ruffner as sales manager, and Mahlon C. Atwood as service manager.

* * *

Fairmont, W. Va.—Violating all the canons of the calendar business, E. R. Manley, owner and operator of the Central Electric Company, this year insisted that his calendars carry not a word of advertising. The calendars are illustrated with 12 reproductons of etchings of outdoor scenes, and hang in many homes where a calendar bearing an advertising legend has never appeared. Mr. Manley believes this to be a goodwill measure. The Central Electric Company is kept at capacity operation keeping the motors and other heavy electrical equipment of the coal mines of northern West Virginia in condition.

* * *

Fairmont, W. Va.—The resignation of Roy W. Godley as rural department manager for the Monongahela Power Company has been announced by President A. C. Spurr. Mr. Godley resigned to become rural service manager for the Edison Electric Institute, with offices in New York City. He joined the Monongahela company in 1936.

Domestic Appliance Company, of Richmond, Va., have painted the outside of their store a gleaming white. This sparkling clean appearance invites customers in to view the complete line of appliances offered. The company will expand their radio and combination business.

DEPEND ON—INSIST ON—

P. R. MALLORY & CO., Inc.

MALLORY CAPACITORS

Mallory MSG Capacitor:—Small, compact AC Motor Starting Capacitor that fits almost every mounting bracket or box. Replaces rectangular capacitors with leads, lugs or studs. Each capacitor is packed with complete set of universal mounting hardware and installation instructions.

Necessary leads, lugs, screws, and nuts are included in each box for any type connectors.

Mallory Type "P" Capacitor:—Plastic case overcomes moisture absorption problems, and provides maximum insulation. May be used to replace cardboard insulated aluminum-case capacitors. Splash-proof plastic end cap and simplified "snap on" mounting bracket available when capacitor is used as original equipment.

Distributed by

INSULATION AND WIRES INCORPORATED
SAINT LOUIS 3, MISSOURI

BOSTON 20, MASS. DETROIT 2, MICH. ATLANTA 3, GA.
HOUSTON 2, TEX. BLUEFIELD, W. VA. NEW YORK 7, N. Y.

SITTLER COMPANY
CHICAGO 7, ILL.

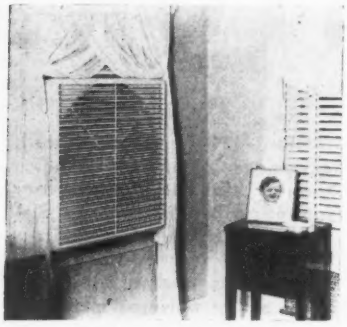
H. A. HOLDEN, INC.
MINNEAPOLIS 3, MINN.

TRI-STATE SUPPLY CORPORATION
LOS ANGELES 13, CAL. • SAN FRANCISCO 7, CAL. • SEATTLE 4, WASH.

New Electrical Products

Efficient Window Fan

THE SHREVEPORT Engineering Company, 1553 Texas Ave., Shreveport, La., announces the availability of a new improved 30" window fan for office, apartment and home use. Sold



under the trade name "Bar-Brook", the fan is compactly built, portable or fixed and is exceptionally quiet in operation.

The unique motor of exclusive Bar-Brook design with new rubber-in-shear mounting makes possible a very compact fan assembly only 5¼" deep—assuring quiet operation.

A two speed range delivers 5500 and 3200 cubic feet per minute. Fan blades are designed to give this high capacity with least amount of noise. Drive is direct without gears or belts.

The case is 30" square finished in ivory white enamel baked on at 350° by the infra-red process. An adjustable pipe stand also finished in white baked enamel allows any adjustment in height between 50" and 66". The welded grill and safety automatic thermal overload on the motor are standard equipment.

The fan is of a convenient size for mounting in a home or office window as a fixed installation or can be moved about on the stand to any desired location.

An all metal stamped louver closely resembling a venetian blind is available as an attractive accessory in matching baked enamel. When used on the outside the louver makes the fan weatherproof—especially important on those permanent installations where the window or opening cannot be closed.

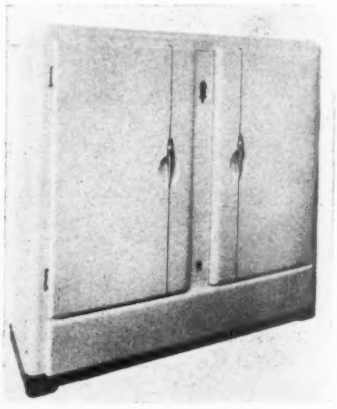
When mounted in a window, the fan completely ventilates the room by exhausting all warm stale air and replacing it with fresh air. The large capacity of the fan and slow speed of the air enables a complete change of air to be made once a minute without draft or noise. This is to be distinguished from the small high speed exhaust fan and the circulating fan that merely stirs up air in a room.

For further details and a descriptive booklet write the Shreveport Engineering Company.

Carrier Upright Farm Freezers

PRODUCTION early in 1946 of two new upright farm freezers was announced in Syracuse, N. Y., recently by Carrier Corporation, manufacturer of air conditioning and refrigeration equipment.

Manufacture was to start recently and first models will consist of a freezer with a capacity of 30 cubic feet and another of 15 cubic feet. Both are of upright design, with front-opening doors, a departure from the conventional chest-type. This advance provides convenient access to the freezing and storage shelves, and reduces



the floor space occupied to a minimum in relation to cubic foot capacity. Production will level off at 3,000 units a month, and distribution will be through leading farm cooperatives and regular Carrier distribution channels.

The larger of the two models, of 30 cubic foot capacity, will provide storage space for 1,000 to 1,200 pounds of frozen foods, while the smaller has a capacity of 500 to 600 pounds.

ATTIC FANS
IMMEDIATE
DELIVERY

(WITH OR WITHOUT MOTORS)

4-Bladed Silver-Aire Fans
42" & 36" Sizes

Here's an opportunity for dealers to make a quick turnover with big profits on a highly demanded item — Silver-Aire attic fans — this new line of fans has all modern features, beautifully constructed. Supply is limited so wire, call or write today for full details.

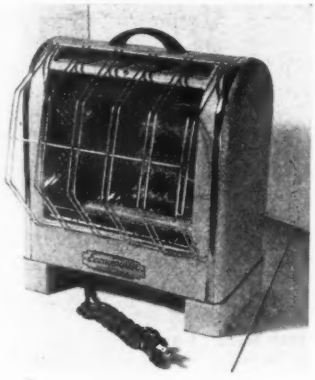
APPLIANCE DISTRIBUTING CO.
163 WALTON ST., N. W.
ATLANTA 3, GA.

Freezing capacity of each unit is from 50 to 75 pounds of food per day.

New Economaster Heater

The Economaster Products Co., Inc., 128-8th Ave., North, Nashville, Tenn., announces the new clean, quick, economical Economaster electric heater.

This new heater is a portable plug-in, and operates on 110-120 ac-dc; 220 volt available at extra charge. The Diamond Grid Circuflector diffuses



heat rays and eliminates "hot spots". Even when in full operation, the exterior is comfortable and never too hot to handle. There is a natural draft behind Circuflector without a fan. It combines reflection, radiation, and circulation. Infra-Red rays are diffused properly for health.

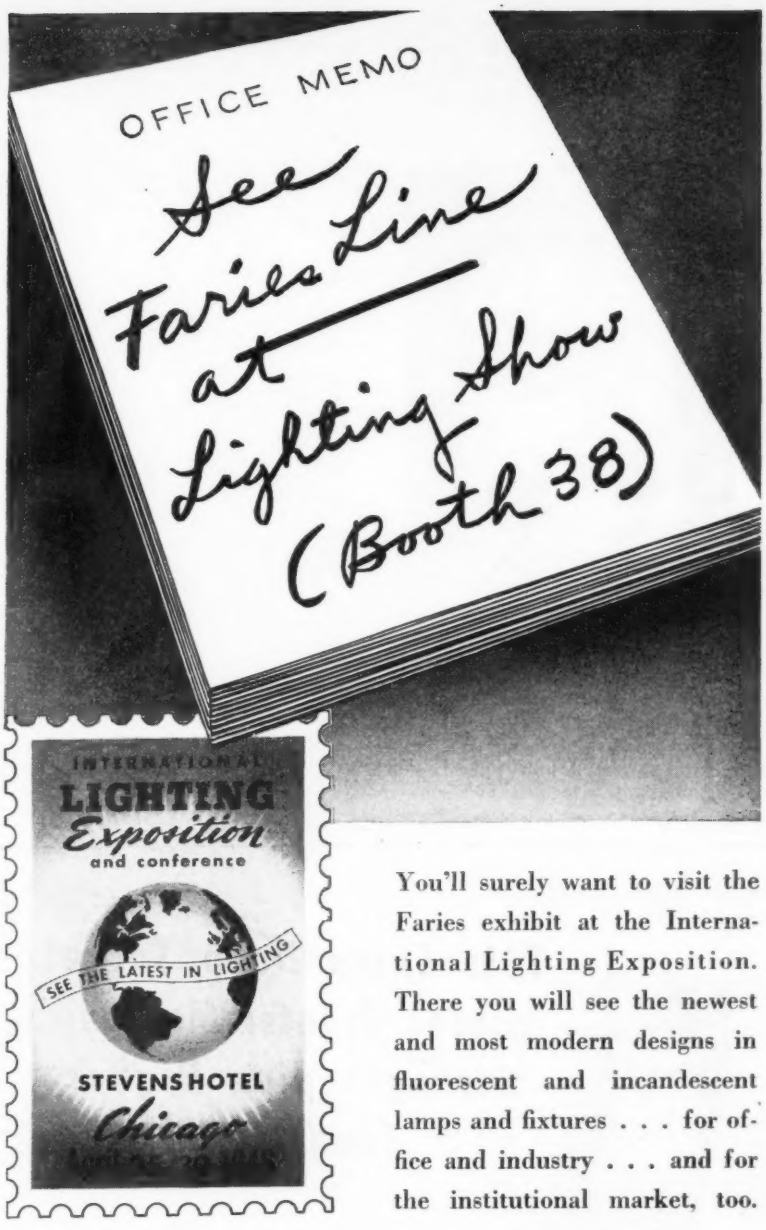
This heater is safe on the finest floor or rug and a chrome guard or Protecto-Bar eliminates fire hazard. It is an electric welded construction, and has a heat proof krinkle finish in attractive colors.

Universal Washing Machines

Three models of Universal's washing machine line comprising a deluxe, medium priced and low priced model, all of the wringer type, were featured at the Landers, Frary & Clark Housewares Show in Chicago. Each model is made with or without self-emptying pump.

The deluxe model will embody outstanding features such as automatic timer or safety switch. The low priced model of six-pound capacity will be an outstanding value at prewar prices and will carry all the fine mechanical features of higher priced models and will fill the demands for the small family laundry.

Ironers on display will feature the portable model with automatic ther-



You'll surely want to visit the Faries exhibit at the International Lighting Exposition. There you will see the newest and most modern designs in fluorescent and incandescent lamps and fixtures . . . for office and industry . . . and for the institutional market, too.

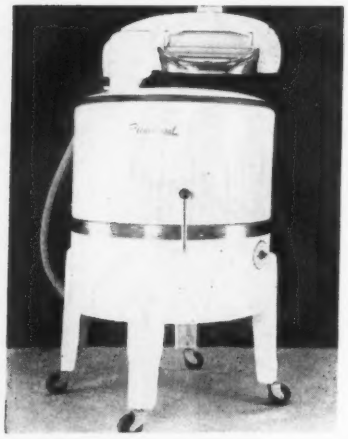
The Faries 1946 Line is the crowning achievement of 66 years of leadership in this industry. See it, and we know you'll be favorably impressed.

Mr. J. V. Everard, Ass't Gen. Sales Manager, and other members of the Faries Sales staff will be most pleased to welcome you at Booth 38.

Faries **Manufacturing Company**
Decatur, Illinois

PIONEERS IN LIGHTING EQUIPMENT SINCE 1880

mostats, foot and finger tip control. A deluxe table top ironer will be available with all its prewar features including a new 6½ x 26 inch economy



ironing shoe with protecto-edge which means no burned fingers; two speed wrinkle proof roll; open at both ends; free rolling at touch of the hand. Adjustatrol leaves both hands free, controls roll movement and application of pressure with a push of the knee.

Location is adjustable so that one can sit in any position from one end of the ironer to the other. This is especially convenient when using only left end of ironer for small pieces. There is a finger tip control also. Safe-A-Matic switch shuts off all current the moment the table top is closed thereby eliminating danger of burning roll because the switch was not turned off. Pilot light shows when heat is on. Duo-thermostat control regulates heat on either half of shoe between 250 and 450 degrees Fahrenheit; a temperature for every fabric. When only half of the shoe is in use the other half can be turned down. It features two drop leaf end tables that drop into flush type recess when not in use and a drop leaf lap guard to keep damp clothes off one's lap. Acid resisting porcelain enamel table top is 18 inches deep, providing additional table space in kitchen and laundry.

Four-Heat Table Grill

THE MIRACLE four-heat electric table grill, of the Miracle Electric Company, Chicago 3, Ill., is attractively designed with a pleasing color harmony of metalescent gray, black, and chrome.

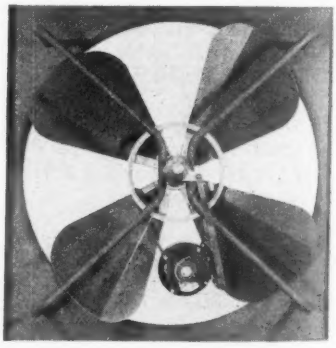
The double burners may be used individually or at the same time. Each

burner has low and high heat, making four heats available. Each burner has a separate switch. The grill is complete with a permanent cord.

The grill weighs six pounds, is 18x9¼x3¼ inches and has a one year guarantee from the date of consumer purchase. It operates on a-c or d-c 110-120 volts.

Stonewall Fans

QUIETNESS of performance and minimum power input for air delivery are among the principal features of a new line of fans announced by the Stonewall Company, 138 W. 54th St., Chicago 19, Ill. The fan is designed



in such a way that the supporting brackets for the motor and fan are mechanically insulated with rubber grommets from the installation panel. The motor is installed on a swing-type bracket which keeps exactly the right tension in the fan driving belt. Another feature of the fan is the aluminum bearing house which acts as an oil reservoir. The housing contains two roller bearings through which the hardened shaft is inserted.

The 42" fan blades are so designed that they deliver 13,500 cubic feet of air per minute in free air, at 383 rpm using a ¼ horsepower motor.

This Extra Deep Socket Insures Greater Mechanical Strength plus Higher Conductivity

Extra strength, to withstand any stresses — plus extra capacity to insure minimum IR drop! That's the combination that has made these Sherman Soldering Lugs the standard of the electrical industry.

Sherman Lugs are bright and clean, too, with no sharp edges or burrs — and the contact surfaces are FLAT.

Write for catalog which gives full specifications on a wide range of sizes and styles.

H. B. SHERMAN MFG. CO.
BATTLE CREEK, MICHIGAN

Sherman HEAVY DUTY SOLDERING LUGS

New Electrical Books

Electric Protective Equipment

By E. S. Lincoln. Published by Essential Books, 270 Madison Ave., New York 16, N. Y. 242 pages, illustrated. Price $3.00.

THE fundamentals of electric circuit protection against overloads, reverse currents, under and over voltage by means of fuses and circuit breakers are thoroughly treated in this new volume. Detailed description of protective equipment, and instructions for proper protection of all electrical equipment and circuits are given.

Pulsed Linear Networks

By Ernest Frank. Published by McGraw-Hill Book Company, Inc., 330 West 42nd St., New York 18, N. Y. 267 pages, illustrated. Price $3.00.

HERE is an introduction to electrical transients with particular emphasis upon the analysis and operation of linear networks across which rectangular voltage pulses are impressed.

Mathematical analysis is confined entirely to differential equations and the results are correlated closely with the physical phenomena they describe. Fundamentals of circuit operation are stressed and explained in detail.

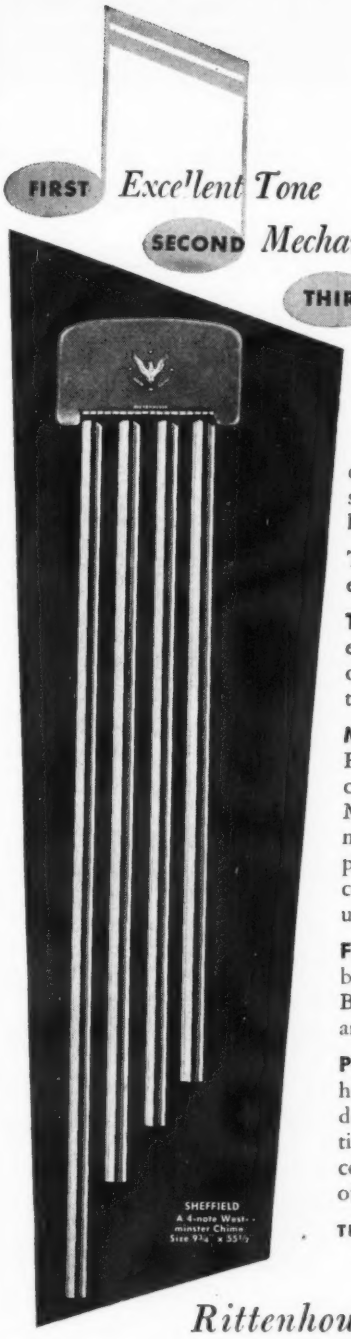
The Service of Selling

By Kenneth Lawyer. Published by The Cleveland Heater Co., 2310 Superior Ave., Cleveland 14, Ohio. 250 pages (each volume). Price $4.00.

THIS BOOK is divided into two volumes, "The Principles of Salesmanship," "The Selling Process," and a companion volume, "Enthusiasm, Personality and Friendships." The volumes are bound in red cloth and are 7¼ x 4¾ inches.

"The Principles of Salesmanship" begins with a discourse of the economical justification of the need of salesmen, and continues by explaining of the triads of sales effectiveness; the principles of business, economics, and ethics; people, what they are, why they buy; and how they buy.

A discussion of the preparation and the value of a planned presentation is presented in "The Selling Process." How to get attention, how to create interest, how to overcome objections, and how to close are thoroughly analyzed. Chapters on goodwill and the follow-up are also included.



FIRST *Excellent Tone*

SECOND *Mechanical Superiority*

THIRD *Fine Styling*

FOURTH *Popularly Priced*

Year after year the four important chime characteristics listed above have made it possible for Rittenhouse Chimes to assume and hold American home-owner preference.

Today, more than ever, Rittenhouse has preeminence in these distinguished attributes:

TONE EXCELLENCE because Rittenhouse engineers have eliminated chime "static"—objectionable mechanical noises. Rittenhouse tone is clearer, richer, more melodious.

MECHANICAL SUPERIORITY because only Rittenhouse Chimes include a Floating Percussion Unit, and the patented "Rhythm Master" timer—simplest timing mechanism made. Plungers and springs are locked in place *permanently*. An adjustable volume-control and shut-off switch add extra chime utility.

FINE STYLING because Rittenhouse combines the famous design ability of Norman Bel Geddes with best chime craftsmanship and materials.

POPULAR PRICING because years of Rittenhouse manufacturing "know-how", war-developed methods and large-scale production make possible greatly reduced chime costs. These savings are reflected in the price of the Rittenhouse line for 1946.

THE A. E. RITTENHOUSE COMPANY, INC.
HONEOYE FALLS, NEW YORK

Rittenhouse Gift-Sale Days

. . . are "just around the corner"

Thousands will buy a Rittenhouse Chime as a handsome, exciting, *different* gift . . . at Eastertime, for Mother's Day—and for the June Bride. Don't pass up this big profit harvest. Advertise and display your 1946 Rittenhouse Chimes *early*.

Rittenhouse

AMERICA'S FINEST CHIME SIGNALS

Electrical Hazards In Operating Rooms

(*Continued from page 48*)

With all suction apparatus, means should be provided for liberating the exhaust gases in a location where they shall be effectively dispersed without coming in contact with a possible source of ignition.

Low Voltage Circuits

In any location, all electrical apparatus or equipment having exposed current-carrying elements, or which is frequently in contact with the bodies of persons, should be of a type operating on a voltage of not over 6 volts. Power may be supplied to such apparatus or equipment from individual transformers connected to an outlet receptacle by means of a plug and cord of types approved for use in explosive atmospheres or by a common transformer installed in a non-hazardous location. Transformers for supplying low voltage circuits should have approved means for insulating the secondary circuit from the primary circuit and should have cores and cases grounded in an approved manner.

Power may also be supplied to low voltage circuits from individual batteries made up of dry cells or from common batteries made up of storage cells installed in a non-hazardous location.

Any receptacle or attachment plug used on low voltage circuits should be of a type which does not permit interchangeable connection with circuits of higher voltage. Exposed non-current-carrying metal parts of electrical equipment or apparatus operating on voltages of 6 volts or less should not be grounded.

In should be recognized that any interruption of the circuit, even circuits as low as 6 volts, either by any switch or loose or defective connections anywhere in the circuit, may produce a spark sufficient to ignite combustible gases.

Cautery Equipment

Cautery equipment, either of the hot-wire or of the radio-frequency type, should be used only in non-hazardous locations. All hot-wire cautery apparatus should be operated on voltages of 6 volts or less.

Illuminating Instruments

In any location, all instruments for providing electrical illumination which are brought into close contact with the bodies of persons, such as endoscopic instruments, head lamps, and the like, should be operated at voltages of 6 volts or less. Switches and control devices for such instruments should be operated at a distance of at least 3 feet from any portion of any system containing mixtures of explosive gases.

Diathermy and X-Ray Equipment

Diathermy and X-ray equipment should be provided with an approved form of grounded electrostatic shield. All switches and control devices for diathermy and X-ray equipment should be operated outside the hazardous location.

Signaling Systems

In hazardous locations, in accordance with the standards of the National Electrical Code, Section 5027, all equipment of signaling and communication systems, irrespective of voltage, shall be of a type approved for use in explosive atmospheres. All wiring for such systems shall be installed in accordance with Section 5014 of the Code.

The section of the report covering reduction of electrostatic hazards will be reproduced in a following issue.

Radio System Speeds Emergency Repairs

(*Continued from page 44*)

"Trouble shooters" with the trucks have the job of keeping power flowing to the city's business houses, industries, homes, and transportation lines.

A demonstration of the new system was given by Gordon Ingram, a Public Service trouble shooter, at Union and Carondelet St. Seated in his repair truck at the busy street corner, he conversed easily with headquarters men at the service department, Tulane Ave. and Telemachus St.

Instead of waiting for the trouble shooters to call by telephone at intervals, the service department now contacts them instantly.

The transmission tower at the company's electric meter shops stands 145 feet above the ground. The central transmitter has a power of 250 watts on a frequency of 31,460 kilocycles. Each of the mobile units has an output of 50 watts.

Tests of the system, according to a company statement, reveal that perfect car-to-car communication is possible over a distance of 25 miles. Flexible antennas, similar to those used during the war on tanks and jeeps, have been placed on each truck.

"EFFICIENCY" DEVICES FOR CONDUIT AND CABLE SUSPENSION

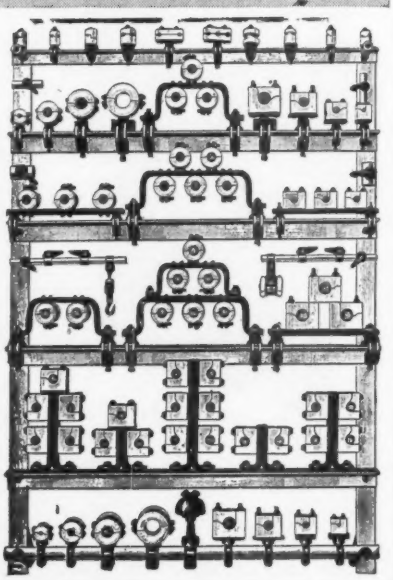
• • • *A* COMPLETE *line of*

SUSPENSION DEVICES!

● For safer, more economical suspension of electrical installations specify EFFICIENCY Devices! Designed to fill a long recognized need, EFFICIENCY Suspension Devices are available for attaching wires, cables, conduit, and pipe to all construction forms and surfaces; structural steel, concrete, brick, hollow tile, or wood . . . without drilling holes! This important advantage makes possible savings not only in time and labor but also in cost of electrical installations.

The illustration at the right shows a number of EFFICIENCY Devices mounted as they would be in actual installations. Note that these fittings clamp solidly to columns, girders, angles, pipe or messengers, safely and securely.

Write today for your copy of EFFICIENCY Catalog 38B . . . contains complete construction and application data on all EFFICIENCY Devices.



Efficiency ELECTRIC AND MANUFACTURING CO.

MANUFACTURERS OF EFFICIENCY ELECTRICAL DEVICES FOR CONDUIT, WIRE AND CABLE SUSPENSION

EAST PALESTINE, OHIO

Oklahoma Utilities Association Meeting

(Continued from page 24)

offered some tax relief. Among those which became laws were the community property law and statutes exempting machinery and equipment purchased for use in industrial establishments from paying the Oklahoma sales and use taxes.

Senator Nance, however, admitted that certain special taxes are the highest in the nation, including the 7½-cents-per-gallon gasoline tax and the beer tax. He defended these, however, as necessary for the present because the people adopted an amendment to the state constitution repealing the state ad valorem tax levy, making it necessary for the state to find its revenues elsewhere.

He said that the state had turned to special taxes, which, with the aid of a budget balancing constitutional amendment, had made it possible for the state to get out of debt and to pay as it goes. Prospects of a surplus of about $12,000,000 in the state general revenue fund at the end of the present fiscal year, Senator Nance thought, would make it possible to reduce the state income tax in some brackets and to lower state gift and inheritance taxes.

New principal officers of the association, elected last December to serve through 1946, were in charge of the convention. They are: A. F. Potter, Bartlesville, president; S. I. McElhoes, Chickasha, first vice-president; L. A. Farmer, Ponca City, second vice-president; E. C. Joullian, Oklahoma City, treasurer.

Miss Kate A. Niblack, who was re-elected secretary at the December meeting, was awarded a certificate of appreciation by the board of directors for her twenty-five years of faithful service with the association. Miss Niblack announced that registration was about 300. This was the first annual convention of the association since 1942, regular meetings having been suspended temporarily because of the war.

Self-Service Display For Small Items

(Continued from page 23)

only four feet in height, so that even with merchandise covering the top, they do not obstruct the view of any part of the store. They are eight feet in length and three feet wide. The arrangement also enables salesclerks to see the customers and to offer help in the selection of goods.

Special items are placed on the islands occupying the front of the

IT'S "TUNE-UP" TIME . . .

IDEAL MOTOR MAINTENANCE EQUIPMENT

PREVENTS COSTLY SHUTDOWNS!

Now is the time to "tune-up" your motors for the heavy production load ahead. Prevent production delays by using IDEAL Motor Maintenance Tools (pictured above) to restore the original smoothness and efficiency of your Commutators and Slip Rings—without dismantling.

1. RESURFACERS (Hand Type) Remove pin ridges, roughness and small flat spots from Commutators and Slip Rings with the armature rotating in its own bearings.
2. PRECISION GRINDERS (With Tool Type Resurfacers) Restore surfaces that are badly scored and out-of-round. Easy to mount right on motor frame. No dismantling necessary.
3. MICA UNDERCUTTERS (Power Driven) Undercut hardest mica, without taking down motor or generator.

PROMPT DELIVERY

Motor Equipment Division

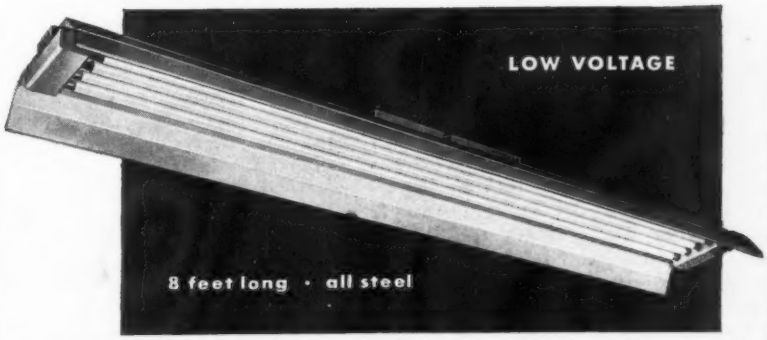
IDEAL INDUSTRIES, Inc.

(Successor to Ideal Commutator Dresser Co.)

1017 Park Ave., Sycamore, Ill.

Sales Offices in all Principal Cities

*COLOVOLT COLD CATHODE INDUSTRIAL FIXTURES



Here is the new Colovolt industrial fixture, one of a complete line of industrial and commercial "packaged" units. Equipped with the standard 93" Colovolt 10,000 hour lamp, Colovolt fixtures may be used singly or in continuous line lighting in multiples of 8 feet. Instantaneous starting, no flickering, guaranteed for 1 year except for failure due to breakage are extra advantages of the Colovolt Cold Cathode low voltage fluorescent lamp. The long life expectancy of Colovolt lamps may be realized even when constantly turned on and off, and *pre-scheduled re-lamping, with no loss of production or time, is now possible with Colovolt installations.*

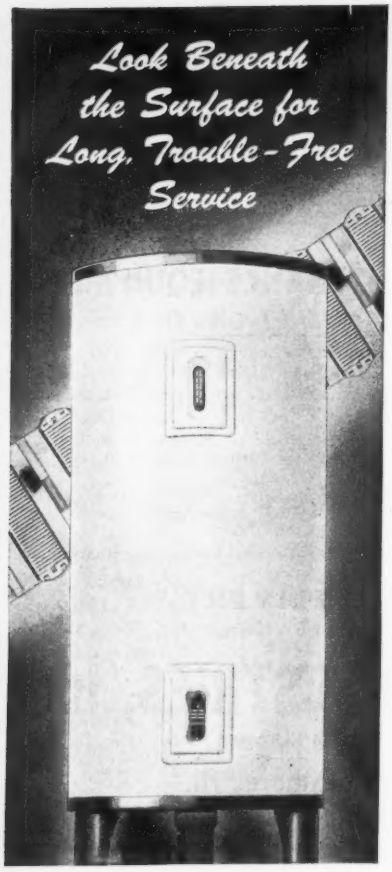
*Trade mark registered U. S. Pat. Off.

Contact your electrical wholesaler or jobber, or write us for full details and prices.

General LUMINESCENT CORPORATION

GENERAL LUMINESCENT CORPORATION

680 S. FEDERAL STREET CHICAGO 5, ILLINOIS



Just as you "cannot judge a book by its cover" neither can you predict the kind of service an electric water heater will give by its outer shell—it is what is underneath that counts. If you compare the inner construction of a Clark with that of other water heaters, you will find many little differences in material and design. But the big difference, the feature that guarantees long, faithful service is the famous Clark "Lifesaver" Element. If you are planning on merchandising electric water heaters you will find it well worth your while to get the facts about this time-tested feature found exclusively in the Clark. Our brochure "In a Nut Shell" is yours for the asking — may we send it to you?

A CLARK FRANCHISE FOR YOUR TERRITORY MAY STILL BE OPEN. WRITE FOR DETAILS.

McGRAW ELECTRIC COMPANY
CLARK WATER HEATER DIVISION
5201 W. 65th ST., CHICAGO 38, ILL.

CLARK
ELECTRIC WATER HEATERS
A Toastmaster Product

store. These compel customer attention as the customer walks to the rear where the staple items which he wants anyway, are carried.

Mr. Rothstein states that staple items, such as transformers, condensers, dial lamps, coils, and resistors, occupy the islands to the rear of the sales floor; thus the customer must walk past the front islands, on which are placed specialty items and accessories such as bottled goods, books, tools, knobs, hardware, etc.

The shelves which line the walls are adjustable and are filled with such items as tubes and volume controls. Enclosed sections underneath hold reserve stock and make replenishment on the shelves easy.

Signs in large modern type around the tops of the wall sections make each section or department easily identified. This idea of labeling each division is another feature borrowed from the department store.

Department stores have recognized that proper lighting is a good promoter of sales, and Southeastern Radio Supply Co. follows this idea. There are 17 four-tube 48-inch fluorescent ceiling lights, with a total intensity of 2,720 watts covering a floor area of 3,000 square feet. In addition, the inverted lighting in the wall shelves contains 12 forty-eight inch 40-watt tubes and eight 24 inch 20-watt tubes, or a total of 640 watts around the wall shelves.

To help reflect the light, the ceiling is finished in a light ivory; the walls are an off-white, contrasting with the floors which are a battleship gray. The shelves and islands are finished in light oak, trimmed with chrome molding. The shelf valance is painted apple green with raised wooden letters in maroon.

In business for 13 years, the company, originally located in Asheville, N. C., was moved to Raleigh in June, 1941. The business is owned by three brothers, Phil, Al, and Bob Rothstein. Al is the active general manager while Phil and Bob are now serving in the United States Army. Stanley Kahn is sales manager and technical adviser. The stock room and shipping department are under the direction of James Ferguson.

Southeastern handles a complete line of nationally advertised brands of radio parts and equipment and is well known among the trade it serves in North Carolina on a wholesale basis.

Mr. Rothstein has a well-rounded-out plan for postwar expansion designed to render even better service to the customers, including an educational program for radio repairmen conducted by competent technicians and factory engineers.

New Fixture for School And Office Lighting

(Continued from page 22)

A main point to be considered in a classroom is maintenance. By reducing cleaning operations to as simple and easy a method as possible, we can induce most school systems to maintain their equipment and get the light they pay for.

Another important point in a classroom is the color of the school equipment. Sharp contrasts are bad. Also "warmth" of light is necessary to give cheerfulness to the room as evidenced by the use of windows so that the students do not feel locked in a cell.

General Offices

Here we put together all requirements for classrooms and drafting rooms but not in the same proportion. First, we consider that the kind of work done in a general office usually requires business machines. We must guard against pin-points of reflection from these machines or from highly finished paper or desk tops, glazed walls, or glass. Also in an office eyes may be looking across the room, or upward, or down at the desk; and a large area of working surface is usually present.

For an office we must develop lighting equipment with extremely low surface brightness and which blends into the ceiling so well that it would be hard to distinguish between brightness of the lighting unit and brightness of the ceiling.

After this result has been obtained, we must make sure that direct glare is not present. It is annoying and harmful to eyes to have a too-bright source of light in constant vision. This bright source may be a window, the lighting equipment or a bright spot of light on the ceiling or wall.

Finally, in an office, we should be able to produce an intensity to fit the work to be done. This, of course, is done easily. Absence of objectionable shadows is already assured when direct and reflected glare are properly controlled.

Equipment has been developed which guarantees a minimum of reflected and direct glare, and can be installed easily in any number of units. It can be in continuous rows, with the rows as close as necessary to provide sufficient intensity. Wakefield has answered the question of maintenance and the question of installation. In an office which might have been used originally for general work, installation of new equipment in continuous rows with few outlets had to be considered. This office area

might be changed and additional intensity needed. So equipment was developed which could be added so that over the years Wakefield equipment, installed progressively, would match, fit and operate properly when used in conjunction with the original equipment.

The Star utilizes two 40-watt fluorescent lamps, accessible from the top of the reflector, which slides easily in and out for ease of cleaning and maintenance without disassembly of any part of the fixture.

The Star has been under development for more than two years. The objective was to provide a glareless illumination for continuous fluorescent mounting on ceilings and with intensities of about 35 foot-candles. Requirements of the proposed new fixture were: (a) efficient light output, (b) good appearance, (c) easy maintenance, (d) low cost of installation, (e) low brightness, (f) dissipation of ballast heat, (g) minimum breakage in shipment, (h) low cost to customer.

The required high efficiency to be designed into this new fixture called for small sections, proper reflecting curves plus maximum reflection throughout. A thin but rigid center structural steel channel of minimum cross-section was designed as a keel or backbone. Decision to use Plaskon, a moulded urea plastic, for the reflector was based upon ten year performance of this type plastic for incandescent reflectors such as the Commodore.

One plastic problem has been shrinkage from the dimension to the cold molded piece and further shrinkage through aging of the plastic. To check theoretical figures, a molding of similiar shape and thickness was produced. From these results a fairer than theoretical shrinkage was determined. Forced aging of the trial molding, was taken into account in the final design.

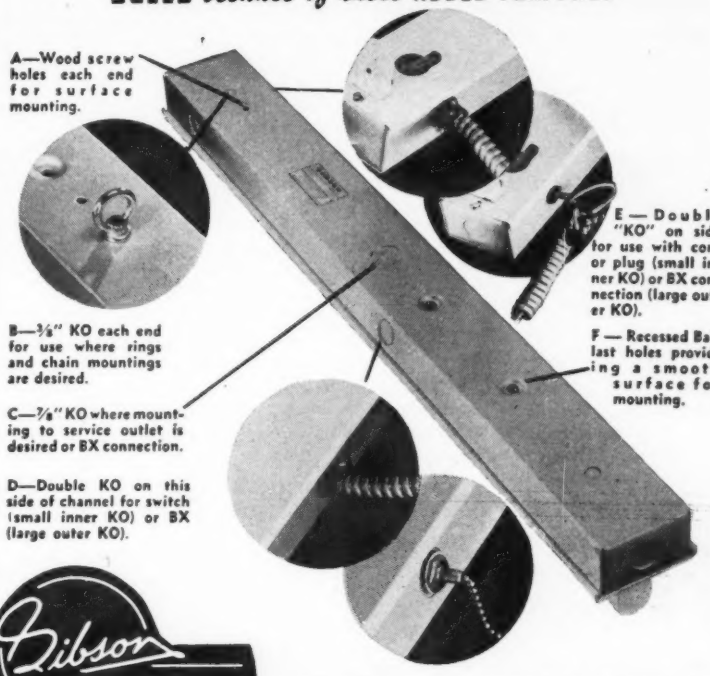
To hold down obstructions to light, the all-luminous trough was of the smallest possible cross section. The reflector measures 3-13/16" deep by 11-3/8" wide for two 40-watt fluorescent lamps. The opaque bands supporting the plastic reflectors are recessed inwardly a 1/4" to produce an inlaid effect and to allow transmitted light to strike the metal and lighten the surface, since unlightened surfaces against a luminous area are annoying.

Installation and Maintenance

Ease of maintenance is necessary to continued efficient performance. If dirt can be easily seen, the installed lighting equipment is more

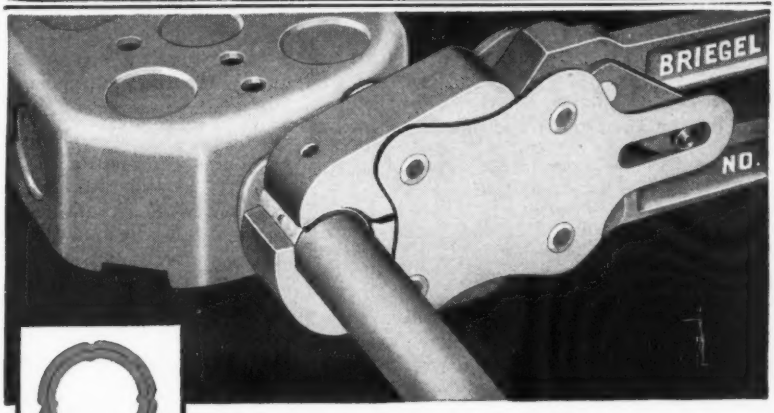
GIBSON *Fluorescent* STRIP-LITE

SELLS *because of these* ADDED FEATURES


A—Wood screw holes each end for surface mounting.
B—⅜" KO each end for use where rings and chain mountings are desired.
C—⅞" KO where mounting to service outlet is desired or BX connection.
D—Double KO on this side of channel for switch (small inner KO) or BX (large outer KO).
E — Double "KO" on side for use with cord or plug (small inner KO) or BX connection (large outer KO).
F — Recessed Ballast holes providing a smooth surface for mounting.

Gibson MANUFACTURING CO ATLANTA, GA.

GIBSON MANUFACTURING COMPANY, 132 10th ST. N. E., ATLANTA, GA.



Cross section Showing Indentations.

E·M·T·UP THE QUICK WAY

Two Squeezes and it's Set

TWO QUICK SQUEEZES give you Finer, Faster Conduit Connections. B-M Fittings do away with the twisting, turning and tightening of nuts and save you valuable time and materials. Then too, they are stronger, neater and much easier to work with in tight places. Start using B-M Fittings today. Have more satisfied customers—more profits from each job!

(All B-M Fittings carry the Underwriters Seal of Approval)

DISTRIBUTED BY

The M. B. Austin Co., Chicago, Ill.
Clayton Mark & Co., Evanston, Ill.
Clifton Conduit Co., Jersey Cy., N. J.
Gen. Electric Co., Bridgeport, Conn.
The Steelduct Co., Youngstown, Ohio
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Triangle Conduit & Cable Co., New Brunswick, N. J.

Prompt Deliveries on Properly Rated Orders

BM SYSTEM

BRIEGEL METHOD TOOL CO. • Galva, Ill.

Use Insto-Gas No. 2 torch (lower insert) for fittings up to 1½", the No. 4 (main photo) for fittings 1½" to 8" and No. 5 (top insert) for largest fittings.

4 INSTO-GAS FLAME FEATURES INSURE FULL-STRENGTH, LEAKPROOF JOINTS

1. Brush-type flame—envelopes the whole copper fitting evenly.
2. Even-temperature flame—quickly heats the entire fitting to correct soldering temperature without creating hot spots or burning the flux.
3. Non-oxidizing flame—makes perfect bond between solder and fitting.
4. Clean flame—leaves no soot, smoke, or grease to be cleaned off.

Ideal for Copper

These four big features make Insto-Gas Torches the number one choice for sweating copper pipe fittings. Insto-Gas Torches light instantly, and won't blow out. They're safe! . . . listed by both Underwriters and Factory Mutual Laboratories.

NOTE: Contractors are urged to anticipate their requirements at least 90 days ahead. While Insto-Gas has doubled 1946 production over 1945, orders are still three months ahead of shipment.

If Wholesaler Cannot Supply Insto-Gas, Mail Coupon

INSTO-GAS CORPORATION, DETROIT 7, MICH.
Please send Insto-Gas Bulletin and name of nearest Distributor.

Name .....

Address .....

E.S.

INSTO-GAS CORPORATION, DETROIT 7

likely to be cleaned. So, another reason for plastic in the reflector.

Ease of installation is also very important. With the Star, a line is chalked along the ceiling; then a short metal strap is secured at designated intervals. Stems are screwed into the fixture's channel, and the flared stem ends are slid easily into the ceiling straps. Four-foot units are joined with a small unit connector at ends of channels. Plastic reflectors and lamps are then installed. Aluminum stem, canopy, and bands provide a light, modern finish.

To keep production costs down, the unit was designed for straight line assembly and pre-assembled wiring. Self-threading screws were used throughout to eliminate tapping. Speed nuts on end caps eliminate large molded bosses and inserts. Plastic for reflectors means lower container costs and less breakage in transit, as well as easier installation and maintenance.

The standard ballast was covered with a white metal open-ended shield to provide circulation of air and to provide a white reflector for an otherwise black ballast. The ballast shield was extended to shield the starters.

The relative brightness of a reflector as viewed by a room's occupants is vital to comfortable seeing. A logical means of determining reflector brightness is to measure its brightness in contrast with that of the ceiling directly above it. Brightness of the star was arrived at by trial.

"Designed By" 30-40 Engineers

It's one thing to make a lighting unit which meets approval of every one at the factory, but something else to perfect one that will be approved by all who have anything to do with its marketing, installation, and maintenance.

Wakefield decided to subject the tentative handmade model to the most caustic criticisms possible. Representatives of central stations, wholesalers, electrical contractors, architects, engineers were invited to conferences at Vermilion in mid-summer 1944; and, just to make it harder for the rough model, school and business executives were invited to represent the ultimate users.

In two three-day conferences everybody said exactly what he thought about the model. They were asked to pull no punches. And they didn't. When they finished "taking it to pieces" these authorities had in substance re-designed several parts of the unit and had refined others.

Developments, when sales executives and users had told the manufac-

LIGHTING

Modern Lighting in the Tradition of Scientific Engineering.

Our individually designed units combine the architect's interpretation of decoration with two decades of sound design, development and manufacture in the lighting field.

We have prepared a series of descriptive bulletins featuring stock designs for commercial and home lighting applications. Copies of these bulletins are available upon request.

Fleuer-O-Lier Member

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GRUBER BROTHERS

72-78 SPRING STREET

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Fill out and mail for 48-page illustrated catalog.

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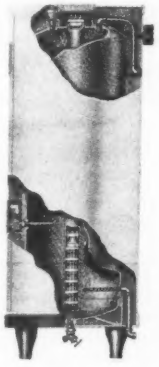
CINCINNATI, OHIO

Time Changes Many Things

The Dependable Performance of

Sepco ELECTRIC WATER HEATERS

Is The Same From Year To Year



No guess work. They are designed for the purpose.

In service since 1915.

Tested and approved. Exclusive construction assures long, trouble-free hot water service.

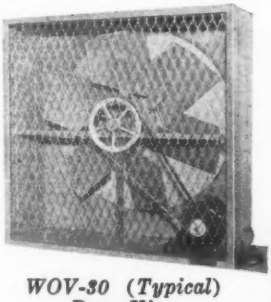
It will pay you to investigate. Ask your electrical dealer, or write us.

THE AUTOMATIC Electric Heater Co., Inc.

Pottstown, Penna., U. S. A.

Wind-O-Vent EXHAUST FANS

Portable – Quiet – Dependable – Safe



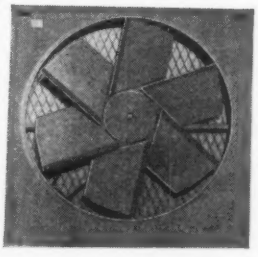
WOV-30 (Typical) Rear View

The Wind-O-Vent Exhaust Fan is built in four sizes with resilient mounted quiet-running, heavy duty motors. Full directions for mounting come with each fan.

This fan is of universal application either as an exhaust fan for commercial use or as a window fan.

CERTIFIED RATINGS

TEST STATEMENT—Each Reed Unit Fan bears a certified rating label of the Propeller Fan Manufacturers Association. This label certifies that the fan has been tested in strict accordance with the Standard Test Code as approved by the American Society of Heating and Ventilating Engineers.



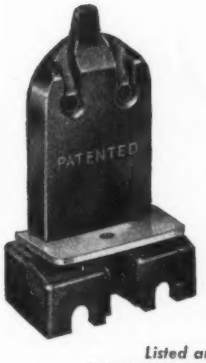
Front View

REED UNIT-FANS, INC.

Manufacturers of Ventilating Equipment

1001 St. Charles Ave., New Orleans 8, La.

These are "*Musts*" in Fluorescent Lighting



FLEX-LOC Lamp Holder

FLEXIBLE: Automatically self-adjusting to variations in length of lamps and spacing of mounting holes. Engineered to fit all standard spacings.

AUTOMATIC LOCK is positive. No extra locking devices are needed. Lamp cannot fall out.

EASY INSERTION AND REMOVAL of lamp. No twisting. No turning.

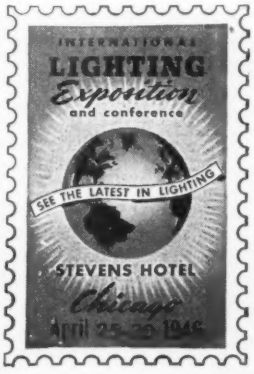
PERFECT ELECTRICAL CONTACT: Brass contacts grip BOTH sides of lamp pins securely.

Listed and Approved by
UNDERWRITERS' LABORATORIES INC.
E.T.L. Test Report No. 314454 Is Available

This Starter *AUTOMATICALLY*

Cuts Out

- " " deactivated or flickering lamps.
- " " current to lamp and ballast.
- " " high maintenance costs.
- " " high power consumption.
- " " short lamp and ballast life.



Resets

- when new lamp is inserted.
- without fussing with starter.

PLASTIC CAN has greater dielectric strength. The boldly knurled rim makes insertion and removal easier, and there are no projecting lugs to cause trouble. The can is SEALED.

See the display of Lloyd Products at the International Lighting Exposition, and the demonstration of the new FLEX-LOC Lamp Holder.

BOOTH 41

Stevens Hotel Chicago

Listed and Approved by
UNDERWRITERS' LABORATORIES INC.
Certified by Electrical Testing Lab., Spec. 6

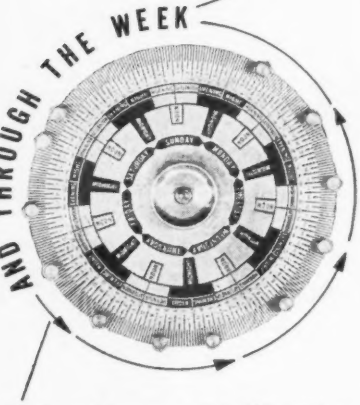
LLOYD POLICY INSURES QUALITY

LLOYD PRODUCTS CO.

71 Gordon Ave. Providence 5, R. I.

Branch Offices and Warehouses in 27 Leading Cities

Automatic Timing



● Control time on a series of operations *for a whole week* . . . a different schedule every day . . . that's what you can do with a Paragon 700 Series Time Switch . . . and do it automatically.

Ideal for controlling time of heating, ventilating, lighting, pumping, flushing or similar operations.

Paragon 700 Series Time Switches are equipped with 6" calendar dials which make one complete revolution every 7 days. Dial trippers can be independently set for different daily ON and OFF schedules.

Operations from ON to OFF or from OFF to ON can be set as close as three hours apart. $24.50 List—Telechron Motored. Write for complete bulletin.

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713 Old Colony Building, Chicago 5, Illinois

SALES REPRESENTATIVES

HOPPER & McCOY
306 Marietta Street, N.W. . Atlanta 3, Georgia

GEORGE E. ANDERSON COMPANY
Santa Fe Bldg. . Dallas 2, Texas . Phone R-4013

Paragon Chicago
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

turer what they wanted, included invaluable suggestions such as translucent end caps, a slightly smaller canopy, and lowering the ballast. Every suggestion was talked out thoroughly from the viewpoints of design, engineering, manufacture, distribution, installation, and maintenance.

This 1944 development group was most enthusiastic. A year later some of this same group and others visited Vermilion to see the model, changes, to make additional improvements, and to discuss practical phases of marketing the new fixture.

Certain suggestions of the industrial designers, dealing largely with appearance, had been accepted and scale models of the reflector and end cap were made in order to check in all dimensions. Plastic molding tryouts were incorporated into the final model, and from it detailed tool drawings were completed. After final approval and tooling, a pilot run was put through the plant which results, as always, in slight tool adjustments. Then regular production got under way with an all-clear signal.

Good Display "Must" For New Dealer

(Continued from page 20)

tion, window construction was carried around onto a side street, providing two-street merchandise display and an over-all window length of 65 feet. On the roof are two large electric signs that may be seen, when approaching from either direction along the main street.

The interior has been divided into an eye-pleasing display room and a service work shop. Separated from the former by a partition, is a handling and general utility space. At one end of the structure is a partitioned-off room for which the firm has future, but not-now-disclosed, plans.

In the display room, 40 by 56 feet, the concrete floor is surfaced with asphalt tile, laid in alternating squares of marbled red and white. Built around each of the four support columns is a two-step display fixture for the showing of small appliance items. These fixtures are covered with linoleum, bound by bright metal strips, and are painted light green to match the tinting of the walls.

Separating the window display space from the showroom is a 24-inch partition topped by a balustrade moulding. The display window flooring is raised 17 inches above the showroom floor. And the space, so provided, becomes available for the storage of small merchandise items

FOLDING **DOUBLE** CUPPED
★ WASHER LUGS ★
A SIZE and TYPE *for every need!*

NO SPECIAL TOOL REQUIRED

WRITE FOR BULLETIN 8-DF

K&H KRUEGER & HUDEPOHL
Solderless Terminal Lugs and Connectors
VINE AT THIRD—E.S. • CINCINNATI 2, OHIO

ST. LOUIS SNAPSHOTS

THE LUCKY FELLOW,
HE HAS A
RESERVATION
AT THE
HOTEL
Mayfair
EIGHTH AND ST. CHARLES STS.

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FANS
CONTROLS

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Delco	Howell	Star
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READING ELECTRIC COMPANY, INC.

Parts Distributors for the Manufacturer

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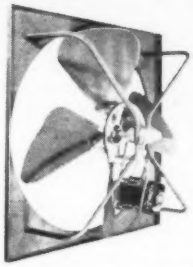
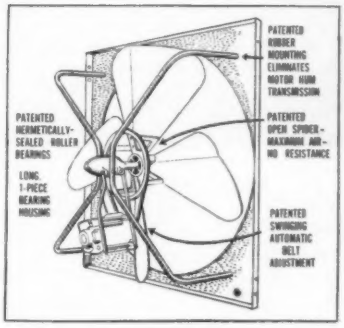
Try to Match this

PERFORMANCE,
CONSTRUCTION,
Sales Appeal




PATENTED RUBBER MOUNTING ELIMINATES MOTOR HUM TRANSMISSION
PATENTED HERMETICALLY-SEALED ROLLER BEARINGS
PATENTED OPEN SPIDER-MAXIMUM AIR-NO RESISTANCE
LONG 1-PIECE BEARING HOUSING
PATENTED SWINGING AUTOMATIC BELT ADJUSTMENT

"A Breeze" to Sell

Imagine an attic fan with these features; no oiling, no belt adjustment or alignment, no motor hum transmission, long life. 42" size moves 13,300 C F M with 1/3 h.p. and 10,750 C F M with ¼ h.p. motor. Well, it's here and it's your chance to cash in on an item that is a breeze to sell. The fan with patent features.

Immediate delivery on complete 42" fan chassis less motors. Limited supply of fans with motors. Any 1/4 or 1/3 h.p. motor can be easily installed. Write today for folder giving full particulars on this revolutionary fan.

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Southern Sales Office: 813 Bona Allen Bldg. Atlanta, Ga.

FACTORY: 138 WEST 54th ST., CHICAGO, ILL.

DESK
PEDESTAL
VENT-EXHAUST
AIR CIRCULATOR
Fans

THE ULTIMATE
IN
QUALITY
AND
PRICE

Portable
Electric
DRILLS

SIGNAL
MANUFACTURERS OF ELECTRICAL PRODUCTS

SIGNAL ELECTRIC MFG. CO.

MENOMINEE, MICHIGAN

WASHING MACHINE

Replacement Parts

For All Makes
WHOLESALE

Serving Southern Dealers
and Repair Agencies

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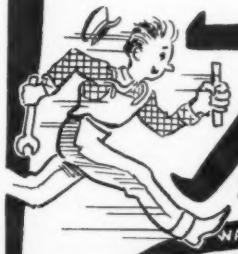
DISTRIBUTORS { Goodrich Wringer Rolls
Gates Belts
T-K Range Parts



Trible's

WASHING MACHINE REPLACEMENT PARTS

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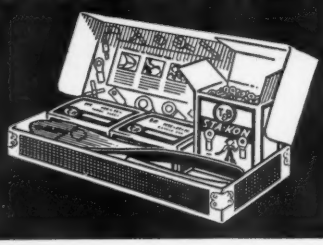
WASHINGTON 1, D. C.

MEMBER, APPLIANCE PARTS JOBBERS ASS'N.

Why This STA-KON KIT Should be Yours



Chiefly because it enables you to quickly hook up, repair, and maintain small wire connections with the greatest ease and safety. Each Kit contains 3 boxes of T&B Sta-Kon * Pressure Terminals ** for wire sizes #22 through #10, and the handy T&B Installing Tool.

Also, this Assortment Kit should be yours because it introduces to you the same Solderless Sta-Kon Terminals that were used by the hundreds of millions in critical war equipment. They install fast and hold fast, and resist vibration and corrosion. Sta-Kon Terminals are designed for high conductivity and are Approved by U. S. Government as well as by the Underwriters Laboratories.

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**Patented

T&B
THE THOMAS & BETTS CO.
INCORPORATED
manufacturers of electrical fittings since 1898
ELIZABETH, 1, NEW JERSEY
In Canada: Thomas & Betts Ltd., Montreal

by taking out one or more of the removable panels of which the partition is made. The display room itself is fluorescent-lighted by sixteen fixtures, each of which mounts four 40-watt lamps.

Associated with Moore is his wife, Mrs. Paul Moore, the company's secretary-treasurer, and Howard M. Wygant, vice-president and general manager.

Pre-Selling Campaign

(Continued from page 18)

wiring plans shall be in accordance with diagrams on Sheets 3, 4 and 5.

5.5. Lighting Circuits.

(a) Lighting circuits shall be diverted into new service switch either by connecting individual circuits or by a Sub. feed of sufficient size to carry entire lighting load between new and old service switches.

(b) When impractical to connect individual lighting circuits to the service switch, a circuit having sufficent capacity to carry the entire lighting load shall be installed from the service switch to the present distribution center or to an existing circuit which may be used in picking up the lighting distribution.

5.6. Range Receptacle. A polarized 3-pole range receptacle shall be substantially mounted flat against the baseboard even with floor and in a vertical position at a point on the baseboard within 12 inches of the center of the location of the range. Contractor to consult owner as to location of range.

5.7. Grounding. The contractor shall install a ground wire as prescribed in National Electrical Code or by local regulations. The ground wire shall be attached to a cold water pipe by means of an approved ground clamp and connected to the ground terminal of the service switch as shown in sheets 3, 4 and 5.

A ground connection to the water pipe shall preferably be ahead of any water meter, but if connected to the water piping on the house side of the meter, a bonding jumper of the same size as the ground wire shall be put around the water meter, using two ground clamps, and installed in such a manner to permit the removal of the water meter.

Where water piping system is not available the grounding connections shall be made to a driven ground, as prescribed in National Electrical Code or Local Wiring Regulations.

5.8. Fusing. Proper size fuses shall be furnished and installed by the contractor.

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Carbon Products

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1913 Washington Ave., St. Louis, Mo.
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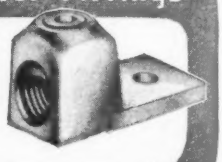
Conductor Fittings



Lugs, Tees, Service Connectors, Grounding Clamps, Straight and Parallel Connectors, Elbows, Cable Taps, etc., etc.
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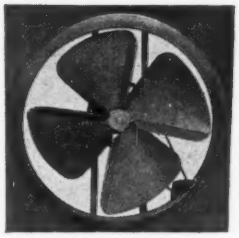
ERIE, PA.
PENN-UNION

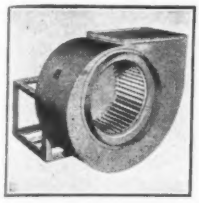
SUBALOX
LEAD AND ALUMINUM PAINT
Spot or Full Coat
for
Galvanized Structures.
It sticks, it blends.
SUBOX INC.
NORTH ARLINGTON, N. J.

THE "Fresh-Air MAKER"



provides fully the comfort and ventilation so essential in army barracks, mess halls, hospitals, headquarters, theaters and other military buildings. Its fine design and sound construction meet the specifications drawn for army fans and it is particularly adaptable to the various types of installations found in army buildings.

HY-DUTY BLOWERS



Single Inlet—Double Inlet. 400 CFM to 12,500 CFM.

Single Inlet Blower illustrated at left is particularly adapted for ventilation of mess halls in military establishments.

VENTILATING DIVISION
SCHWITZER-CUMMINS COMPANY
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PROVED THROUGH THE YEARS FOR
RELIABILITY • UNIFORMITY
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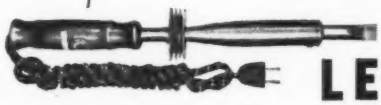

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of famous soldering irons and fine solders will keep retailer goodwill and create constant Profit. Available now in quantities to meet the post-war demand the Lenk line is a lively one—and the profits are as steady and dependable as the merchandise!

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THE MFG. COMPANY
NEWTON LOWER FALLS 62, MASS.
★ ★ Manufacturers of Soldering Equipment Since 1919

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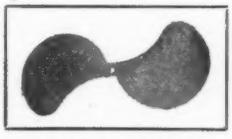
VOGUE ROOM
1000 ROOMS WITH BATH
RADIO IN EVERY ROOM
FIVE FINE RESTAURANTS
CENTRAL DOWNTOWN LOCATION

FAN BLADES



Model 421 CO 22" Blade

Model 421 CO, 2 blades, operates on 1/6 H.P. motor or larger at 1,725 R.P.M. Made in either 1/2" or 5/8" bore. Packed 12 to carton.

Model 420 CO (shown at right)—4 blades, operates on ⅛ h.p. motor or larger at 1140 r.p.m. Also operates on 1/3 h.p. or larger at 1725 r.p.m.

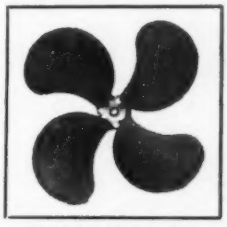
Model 424 CO (shown at right)—4 blades, operates on 1/6 h.p. motor or larger at 1140 r.p.m. Also operates on ½ h.p. motor or larger at 1725 r.p.m.

Made in either ½" or ⅝" bore. Packed 6 to the carton.

Made by a manufacturer with years of ventilating experience, with thousands in satisfactory use throughout the country.

These blades are designed and engineered to produce a maximum flow of air, are uniform in size and shape for equal distribution of load, dynamically BALANCED with every desirable feature of STRENGTH, TRUENESS, QUIETNESS and BEAUTY incorporated into them.

Prices quoted on request.



Model 420 CO 20"
Model 424 CO 24"

Products of C & H Air Conditioning Fan Co., Inc.
Distributed by

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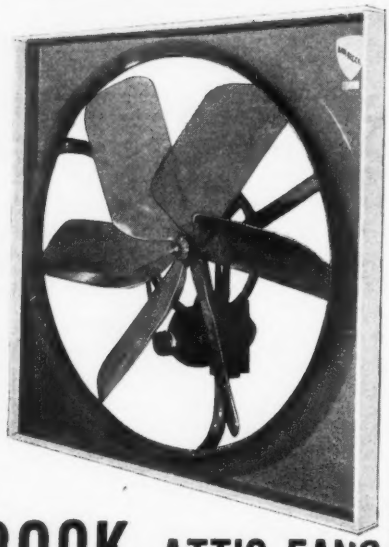

. . . . when you install COMFORT COOLING with

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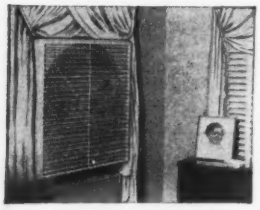
Home owners are quick to recognize the economy and efficiency of Bar-Brook Comfort Cooling with Bar-Brook Attic Fan installations. They want them in their old homes —demand them in new homes.



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The *New* BAR-BROOK Window Fan

At last, a window fan of modern, functional design. Ideal for apartments, small homes, offices. Only 5¼" thick. Looks like venetian blind.

Write for descriptive literature TODAY . . . and ask if your territory is still open.

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BAR-BROOK SHIELDS YOU FROM SUMMER HEAT

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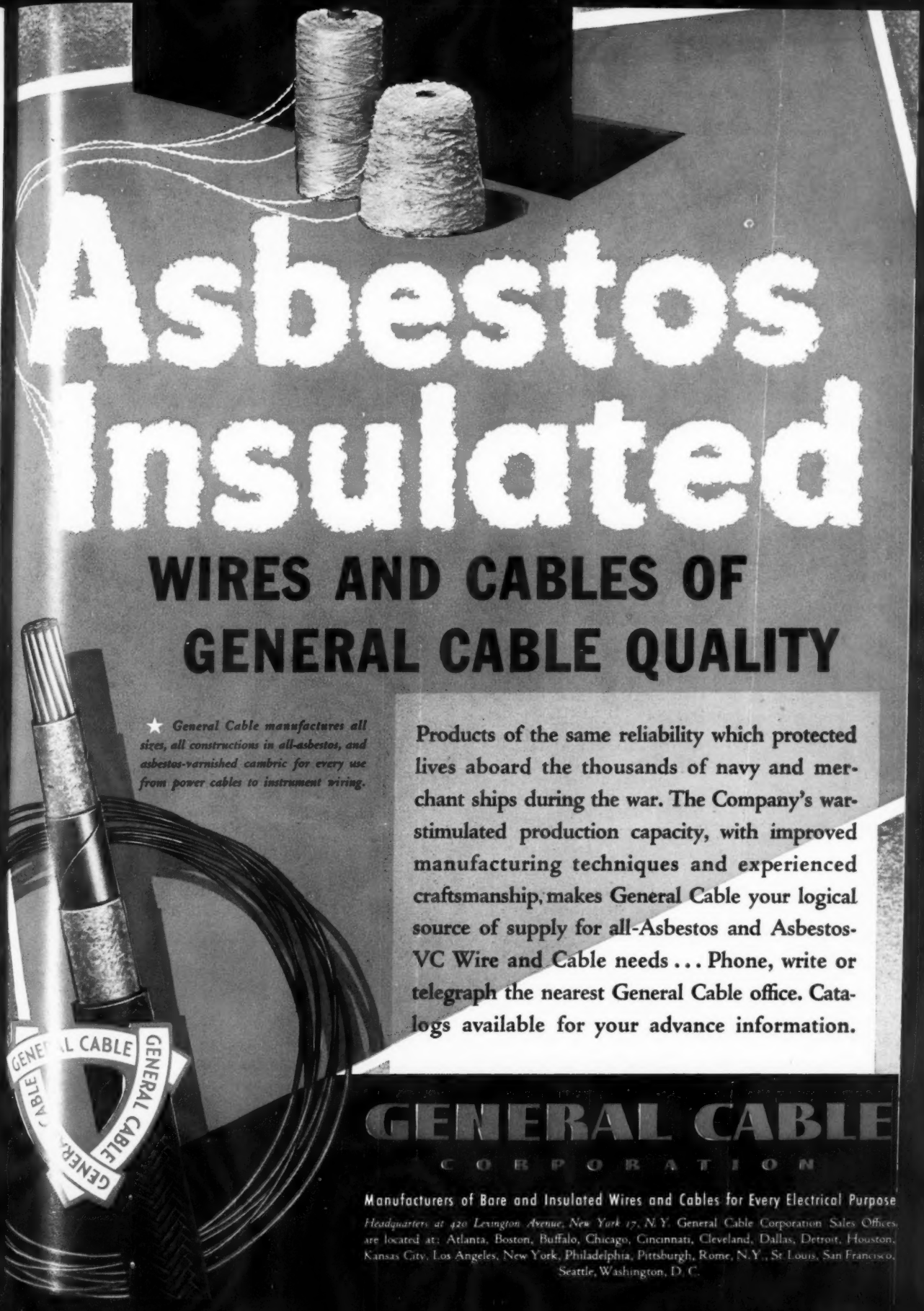
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